EXHIBIT G

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Samsung Electronics Co., Ltd and Samsung Electronics America, Inc.,
Petitioners

v.

Dareltech, LLC, Inc.,
Patent Owner

Case IPR2019-01529

U.S. Patent No. 8,593,427

Petition for Inter Partes Review of
U.S. Patent No. 8,593,427

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1003	*Law*, U.S. Patent Pub. 2013/0265243
1004	*Ignatchenko*, U.S. Patent No. 7,778,492
1005	Prosecution History of U.S. App. Ser. No. 13/905,064
1006	PCT Application No. PCT/CN2012/087795
1007	LaPlante, Comprehensive Dictionary of Electrical Engineering, 2^{nd} Ed., CRC Press, 2005, p. 607
1008	Microsoft Computer Dictionary, Fifth Ed., 2002, pp. 61, 198.
1009	Merriam-Webster's Collegiate Dictionary, Eleventh Ed., 2009, p. 316, 351
1010	Declaration of Andrew Wolfe, Ph.D.
1011	U.S. Patent No. 4,972,496 to Sklarew
1012	O'Malley, *BellSouth's communicative Simon is a milestone in the evolution of the PDA*, Byte
1013	Ha, *Bellsouth IBM Simon*, Time Magazine, Oct. 25, 2010
1014	Ha, *Palm Pilot 1000*, Time Magazine, Oct. 25, 2010
1015	Newton Apple MessagePad Handbook, © 1995
1016	Macworld, September 1993 (cover)
1017	U.S. Patent Pub. No. 2013/0316769 to Kim
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I. INTRODUCTION

Petitioners Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Samsung") request *inter partes* review of claims 1-17 of U.S. Patent No. 8,593,427 ("the '427 patent").

II. GROUNDS FOR STANDING (37 C.F.R. § 42.104(a))

Samsung certifies that the '427 patent is available for *inter partes* review, and that Samsung is not barred or estopped from requesting *inter partes* review to challenge the claims on the grounds herein. Samsung filed this Petition within one year of service of Patent Owner's ("Dareltech") original complaint against Samsung in district court. *See Dareltech, LLC v. Samsung Elecs Co., Ltd., et al.*, Case No. 4:18-cv-00702 (E.D.T.X. filed 10/4/2018) (Served 10/31/2018).

III. STATEMENT OF PRECISE RELIEF REQUESTED FOR EACH CLAIM CHALLENGED

A. Claims and Statutory Grounds (37 C.F.R. § 42.104(b))

Samsung requests review and cancellation under 35 U.S.C. § 311 of claims 1-17 in view of:

Prior Art
Yang, U.S. Patent Pub. No. 2014/0189583 (Ex. 1002); effective filing date 12/28/2012; prior art under AIA 35 U.S.C. § 102(a)(2).
Law, U.S. Patent Pub. 2013/0265243 (Ex. 1003); effective filing date 4/10/2012; prior art under AIA 35 U.S.C. § 102(a)(2).
Ignatchenko, U.S. Patent No. 7,778,492 (Ex. 1004)

Grounds of Unpatentability	
1A	*Yang* in view of *Law* renders obvious claims 1-17 under 35 U.S.C. § 103.
1B	*Yang* in view of *Law and Ignatchenko* renders obvious claims 1-17 under 35 U.S.C. § 103.

IV. Overview of the ’427 Patent

A. Summary

The ’427 patent is directed to a system for reducing power consumption in portable, battery-powered, electronic devices such as mobile phones. ’427 patent, Abstract. The patent is specifically directed to managing power consumption in the display systems used by such portable devices. *Id*., 1:24-26.

The embodiments of the ’427 patent have a touchscreen display (*e.g.*, touch sensitive display system 112, shown in Fig. 1) that is controlled by a display

controller (*e.g.*, display controller 156 shown in Fig. 1). *Id*., 9:6-9. The touchscreen displays used in the '427 patent's embodiments have touch-sensitive sensors, which are used to detect contact on the display screen. *Id*., 9:14-24 ("**Touch screen 112 has a touch-sensitive surface, sensor or set of sensors** that accepts input from the user based on haptic and/or tactile contact.").[1]

Various ways of displaying information on the touchscreen display of the portable device are described. Fig. 7 is one example:

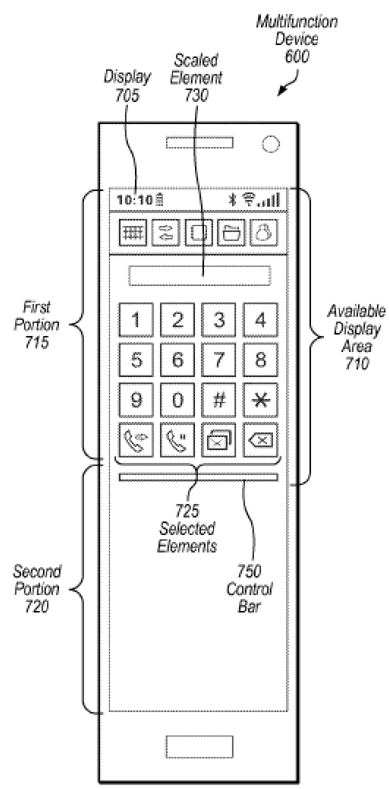


FIG. 7

[1] Unless otherwise stated, Samsung has added all emphasis to quotes.

In the Fig. 7 embodiment, display screen 705 is divided into two different portions: first portion 715 and second portion 720. *Id*., 17:44-49. First information is displayed in the first portion 715 (*id*., 17:44-47), whereas second portion 720 "is configured in a powered-off state." *Id*., 17:57-58.

The '427 patent states that powering-off a portion of the display screen, *e.g*., second portion 720, provides "numerous" benefits, which include increased battery life and the ability to use the unused screen portion as a grip so a user can securely hold the device. *Id*., 5:3-9.

The touchscreen display described in the '427 patent can transition from a state like that shown in Fig. 7 (and others), in which second portion 720 is in a powered-off state, to a state in which second portion 720 becomes active, thus displaying information and being responsive to user input. This transition takes place in response to a "user indication" in the first portion of the screen. *Id*., Abstract.

Thus, in response to a user indication in the first portion of the touchscreen display, the second portion of the touchscreen display transitions to a "powered-on state" so that it can "perform display functions and receive user input." *Id*. *See also* Wolfe, ¶¶49-54.

B. Prosecution History

The ’427 patent was filed on May 29, 2013, which is its effective filing date.[2] On 10/5/2013, the Examiner issued an Office Action rejecting all claims as obvious under prior art not at issue in this petition. On 9/23/2013, an Examiner-initiated interview took place, during which Applicant proposed amending the independent claims to recite turning off touch detection sensors of the display screen which are incapable of receiving user input in the second portion of the display screen. Ex. 1005 at 36 (Interview Summary). The Interview Summary also indicated that incorporating the subject matter of dependent claims 2, 8 and 15 [sic: 16] into the independent claims would result in allowance.

On 10/4/2013, a Notice of Allowance issued with an Examiner’s Amendment incorporating the claim amendments from the Interview Summary. *Id.*, 27-30. Thus, an element of claim 1 was amended as follows:

> a second portion of the display screen <u>and associated sensors</u>, which is configured in a powered-off state <u>and incapable of receiving user input</u>;

[2] The ’427 patent purports to claim the benefit of two provisional applications. Whether the provisional applications support the challenged claims is not relevant since the prior art predates both provisionals.

Id., 27 (emphasis in original). Likewise, the elements labeled below as [1f]-[1h] from dependent claim 2 were added to claim 1. *Id.,* 28. Similar amendments were made to the other independent claims. *Id.,* 27-30.[3]

C. Level of Ordinary Skill in the Art

For the purposes of this petition,, a person of ordinary skill in the art at the time of the alleged invention of the ’427 patent (“POSITA”) would have a 4-year degree in Electrical Engineering, Computer Engineering, or Computer Science and one year of experience in user interface software or system design. A POSITA could have also obtained similar knowledge and experience through other means. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995).Wolfe, ¶59.

D. Claim Construction

In this proceeding, the claim terms should be given their plain and ordinary meaning as understood by one of ordinary skill in the art, consistent with the disclosure and the prosecution history. 83 Fed. Reg. 51, 340-59 (Oct. 11, 2018). In addition to the below terms, Samsung addresses the meaning of other claim language while comparing the claims to the prior art so that such language can be discussed in context.

[3] The ’427 patent provides no examples illustrating what is meant by these added claim elements. For example, none of the ’427 patent’s figures illustrate the recited “third information.”

1. "Mathematically Upscaling"

Samsung submits that the term "mathematically upscaling," which appears in claims 1, 7 and 13, means "*using mathematical techniques to make a displayed image larger*," which is its ordinary meaning. The specification provides no special definition for this term and uses the term with its ordinary meaning provided herein. For example, at 22:63-67, the '427 patent teaches "second information" is generated "by mathematically upscaling the first information." No special definition is provided and no mathematical algorithms or techniques are disclosed for performing the recited "mathematical upscaling" in this portion of the specification or anywhere else. Wolfe, ¶61

In the context of the patent's specification, a POSITA would understand that the term "scale" means "to change the size (*i.e.*, enlarge or shrink) of an image or object…" Ex. 1007, p. 607. Further, based on the prefix "up," a POSITA would recognize that the claim term "mathematically upscaling" refers to enlarging images or objects. Wolfe, ¶62. Thus, Samsung's construction comports with its ordinary meaning. *Id*.

2. "Graphical Content Data Structure"

Samsung submits that the term "graphical content data structure," which appears in claims 2-6, 8-12 and 14-17, means "*an organized collection of graphics data*," which is its ordinary meaning. Samsung first notes that data structures are

well known in the art, and are "any of various methods or formats (as an array, file, or record) for organizing data in a computer." Ex. 1009, p. 316. As for the entire phrase, the specification provides no specific definition, but instead, relying on the term's ordinary meaning, broadly states that a "graphical content data structure" comprises "content for display in the available display area." '427 patent, 17:60-67. Thus, the recited "graphical content" is any graphics data (i.e., content) that can be displayed, and which is organized in a data structure. The term's ordinary meaning is therefore "*an organized collection of graphics data*." Wolfe, ¶64.

E. The Board Should Institute Review

No reference in this Petition was before the Examiner during prosecution of the '427 patent. Likewise, no previous petitions for *inter partes* review have been filed regarding the '427 patent. As detailed below, claims 1-17 of the '427 patent are invalid.

V. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. *Yang* Overview

Yang was filed in the United States on 10/25/2013 and claimed priority to PCT Application No. PCT/CN2012/087795 (Ex. 1006), filed on 12/28/2012 designating the United States. *Yang* therefore has an effective filing date of December 28, 2012. *See* 35 U.S.C. § 102(d). Thus, *Yang* is prior art under 35 U.S.C. § 102(a)(2).

Yang discloses a portable electronic device such as a mobile phone. *See Yang*, Abstract; ¶19 ("Referring to FIG. 1A, shown is a portable electronic device (PED) 100 having a display 102. The PED 100 can be any type of portable electronic device such as a mobile telephone (*e.g.*, smartphone), a tablet computer..."). Each of *Yang's* embodiments include a touchscreen display that uses one or more touch sensors. *Id*. The touchscreen display is controlled by one or more controllers. *Id*., ¶¶27, 30.

Yang recognized that the "display of a portable electronic device is another feature that is a big consumer of battery charge." *See id*., ¶19. To reduce the amount of power consumed by such display screens, *Yang* teaches that such devices "may conserve power while in a normal operating mode by switching from an original screen mode to an adjusted screen mode. While in adjusted screen mode, the device display may include an adjustable displaying area and an inactive area." *Id.*, ¶18. *Yang* teaches that "the inactive area may fill the portion of the display screen that is not being used to display the extract[4] of the user interface in the adjustable displaying area," and further notes that the "inactive area may use less power than an active area such as the adjustable displaying area or a full-size display screen." *Id*.

[4] Note that in *Yang*, the information displayed in the reduced-size displaying area is often referred to as an "extract."

Yang teaches that when in the adjusted screen mode (often abbreviated therein as "ASM"), the screen and the touch sensors making up the inactive portion of the display screen are turned off. For example, *Yang* teaches that the portion of the display screen that is inactive "**<u>may be turned off</u>**, at rest, or otherwise not available for active use," depending on the screen technology in use (*e.g.*, OLED or LCD). *Id.*, ¶23. Likewise, *Yang* teaches that the inactive area turns the touch sensors in the display screen off because it discloses that "**<u>inactive area 112 may be disabled or non-responsive to display 102 operations</u>**." *Id.*, ¶53. Yang also teaches that "**<u>if the user tries to input a touch command in inactive area 112, PED 100 may not respond</u>**." *Id.* A POSITA would recognize that devices having this functionality will have reduced power consumption. Wolfe, ¶68.

Yang describes various examples of its original screen mode (often abbreviated therein as "OSM") and its adjusted screen mode. Fig. 1A shows a portable device in OSM:

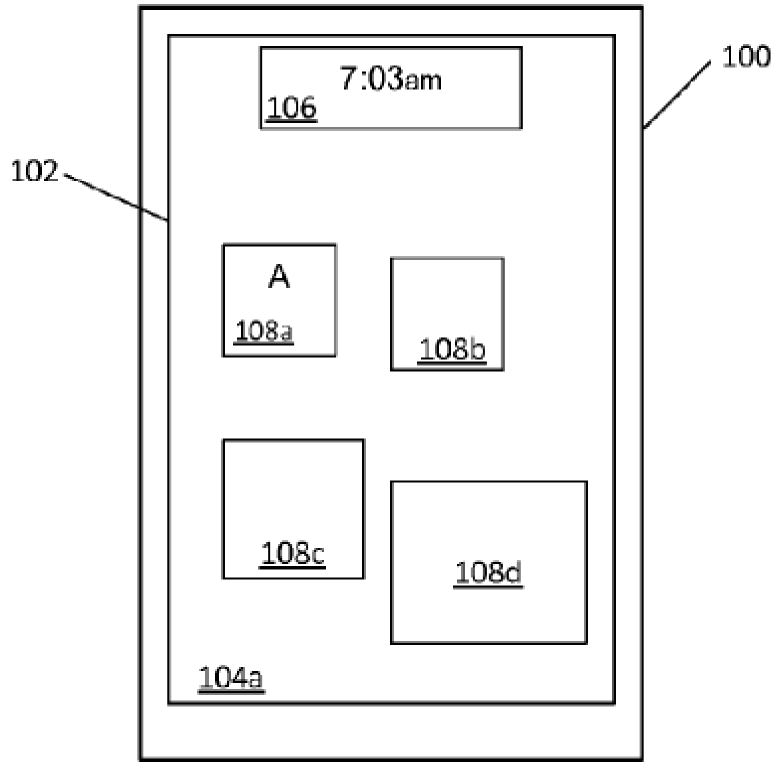


FIG.1A

Fig. 1 shows a portable electronic device 100 having a display 100. *Yang* teaches that the display can use various technologies, including liquid crystal display (LCD) or organic light emitting diode (OLED) technology. *Yang*, ¶19. A POSITA would have known OLED technology is an emissive technology that requires no backlighting. Thus, in displays using OLED technology, each pixel generates its own light output within the available color spectrum. A POSITA would have also known that each individual pixel can be disabled, *i.e.*, turned off, such that the disabled pixels generate no light at all. Thus, a POSITA would have known that

disabled pixels in an OLED display consume what is in practical terms no power at all. Wolfe, ¶70.

Yang teaches that when in OSM as illustrated in Fig. 1A, the touchscreen display 102 can have information displayed that occupies all or most of the available screen area 104a. *Yang*, ¶20. When in OSM, various different graphical content can be displayed as well as background image content such as wallpaper:

> As shown in FIG. 1A, an original interface such as a home screen can be displayed in the displaying area 104a. **The original interface shown in FIG. 1A includes a clock area 106 and images 108a, 108b, 108c, and 108d**. **Each image 108a, 108b, 108c, and 108d may be one of text or a graphic such as, without limitation, an icon, a tile, a button, a menu item, and a photograph**. . . The original interface may also include a background such as wallpaper (not shown) as is known in the art.

Id.

Yang further teaches various embodiments of ASM, in which a first portion of display screen 102 remains active while a second portion of display screen 102 is powered-off and does not respond to user input. One such example of *Yang's* portable device operating in ASM is shown in Fig. 1C:

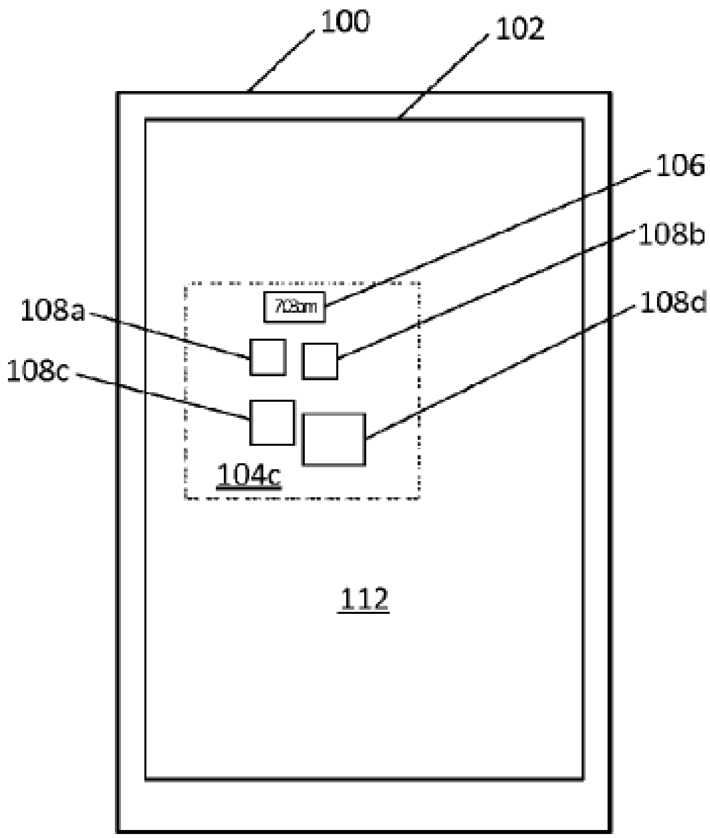


FIG.1C

In the Fig. 1C embodiment, the entirety of the originally displayed information is reduced to a reduced-size displaying area 104c. As will be discussed in detail below, *Yang* teaches transitioning from the embodiment shown in Fig. 1C to the embodiment shown in Fig. 1A, and vice-versa. As will be further discussed below, these teachings in *Yang*, especially when combined with the teachings of *Law* (discussed below) teach all the claim limitations of the challenged claims.

In sum, *Yang* discloses a device having the same purpose as the ’427 patent (a mobile device that uses less power to extend battery life) and does so using the

very same features claimed in the ’427 patent (disabling portions of the display screen).

B. *Law* Overview

Law was filed on 4/10/2012, which is also its effective filing date, and is thus prior art under 35 U.S.C. § 102(a)(2). *Law* describes a touchscreen display that controls the amount of power it consumes by powering down subsets of its touch sensors. *See, e.g., Law* at Abstract; ¶1. *Law* states that touchscreens “are used in many types of computing devices, for example Smartphones, tablet computers, mobile computers (*e.g.*, laptop computers), all-in-one computers and game consoles.” *Id.*, ¶4. *Law* teaches its touchscreen includes “**plurality of touch sensors** 112, 114, 116, 118 positioned around a periphery of the touchscreen 110.” *Id.*, ¶25. *Law* further teaches that its “touch sensors 112-118 are configured to detect when and where the touchscreen 110 is touched, for example via a human appendage and/or a stylus, as is known to those skilled in the art.” *Id*.

Like *Yang*, *Law* recognizes that touch-sensitive display devices consume power and describes various ways to reduce such power consumption. *Law* recognized that users are less likely to touch portions of a screen where information is not displayed and expect or desire that the device respond to the touch, and therefore power supplied to the sensors used to detect user input to those portions can be reduced, thereby extending battery life. *See, e.g., id.*, ¶21.

Law teaches that in one of its embodiments, touch sensors for the area where nothing is displayed can be "selectively deactivated." *Id.,* ¶10. *Law* teaches that its selective deactivation means removing voltage from touch sensors (*id.,* ¶32), which a POSITA would understand to be powering them off. Wolfe, ¶76. Finally, *Law* teaches that the display, including the sensors, is controlled by a touchscreen controller. *See, e.g., Law*, Figs. 1-3 and ¶¶7, 24-27.

Thus, *Law*, like *Yang*, teaches that power consumption in electronic devices can be reduced by disabling a portion of a touchscreen display, which *Law* makes clear includes powering-off the screen's touch sensors. Wolfe, ¶77.

C. *Ignatchenko* Overview

Ignatchenko issued on 8/17/2010 and is thus prior art under 35 U.S.C. § 102(a)(1). *Ignatchenko* describes a method for "resizing of an image from a default-size resolution to a different or target image size in response to any form of input." *Ignatchenko*, 4:12-14. *Ignatchenko* further teaches that "[i]n a preferred embodiment, the image may be resized in response to user input based on the user's preference for the size of the image (*e.g.*, the amount of space that the image occupies on a monitor)." *Id.*, 4:14-18. Finally, *Ignatchenko* describes mathematical techniques for increasing the size and resolution of such images. *See, e.g.*, *id.*, 4:21-44.

D. Grounds 1A: The Combination of *Yang* and *Law* Discloses All Elements Of The Challenged Claims

1. Claim 1

[1p] "A method, comprising"

To the extent the preamble is limiting, *Yang* discloses a "method" since it discloses a method that controls a touchscreen display in a battery-powered portable device to control power consumption. Wolfe, ¶79. *See, e.g.*, *Yang*, Figs. 2-4 (flowcharts).

[1a] "displaying first information in an available display area comprising a first portion of a display screen and associated sensors in a configuration having a plurality of portions, comprising"

Yang discloses this element. Wolfe, ¶¶80-87. *Yang* teaches display of "first information in an available display area comprising a first portion of a display screen and associated sensors." *Yang's* portable electronic device, shown in Figs. 1A-1E, has display screen 102 having touch sensors. *Yang*, ¶19. Wolfe, ¶80.

In the embodiment shown in Fig. 1C, *Yang* discloses a personal electronic device 100 that displays a reduced-size displaying area 104c, which is generated by reducing the size of the original displaying area 104a, shown in Fig. 1A. *Yang*, ¶42. *Yang's* reduced-size displaying area 104c contains images 108a-108d and clock 106, which corresponds to the recited "first information." Wolfe, ¶81. Indeed, *Yang* teaches images 108a-108d can be various items such as icon and photos:

> Each image 108a, 108b, 108c, and 108d may be one of text or a graphic such as, without limitation, an icon, a tile, a button, a menu item, and a photograph.

Yang, ¶20. A POSITA would understand that icons, menu items, photographs and a clock are "information." Wolfe, ¶82. Thus, the items displayed within *Yang's* reduced-size displaying area 104c correspond to the "first information" recited in this claim element. To demonstrate this, images 108a-108d and clock 106 in reduced-size displaying area 104c, *i.e.*, "first information," displayed in the Fig. 1C embodiment are annotated below in yellow:

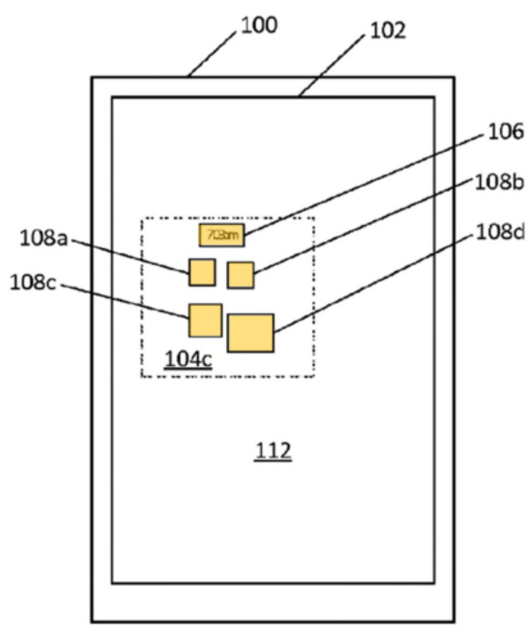


FIG.1C

Id., ¶82.

The claim further requires that the recited "first information" be displayed in "an available display area comprising a first portion of the display screen." Images

108a-108d and clock 106 in reduced-size displaying area 104c are plainly displayed "in an available display area," as recited in the claim. Yang, ¶41. *Yang* further reinforces that only the area within reduced-size displaying area is "available" by making clear that the remaining screen area is "inactive." In particular, *Yang* calls the area outside of reduced-size displaying area 104c "inactive area 112," and teaches that it "may be turned off, at rest, or otherwise not available for active use." *Yang*, ¶23. Thus, a POSITA would recognize that inactive area 112 is not an available display area. Wolfe, ¶83. The following annotated version of Fig. 1C illustrates where the recited "available screen area" is found in the device through purple highlighting:

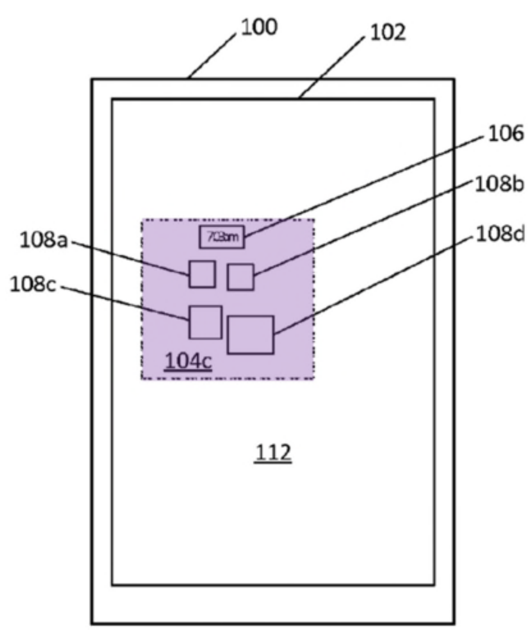


FIG.1C

Id.

Next, the claim requires that the recited "available display area" comprise "a first portion of a display screen and associated sensors." *Yang's* reduced-size displaying area 104c occupies a "first portion of the display screen." This is shown in Fig. 1C below, which is red-boxed to show that *Yang's* reduced-size displaying area 104c occupies a "first portion" of the display screen:

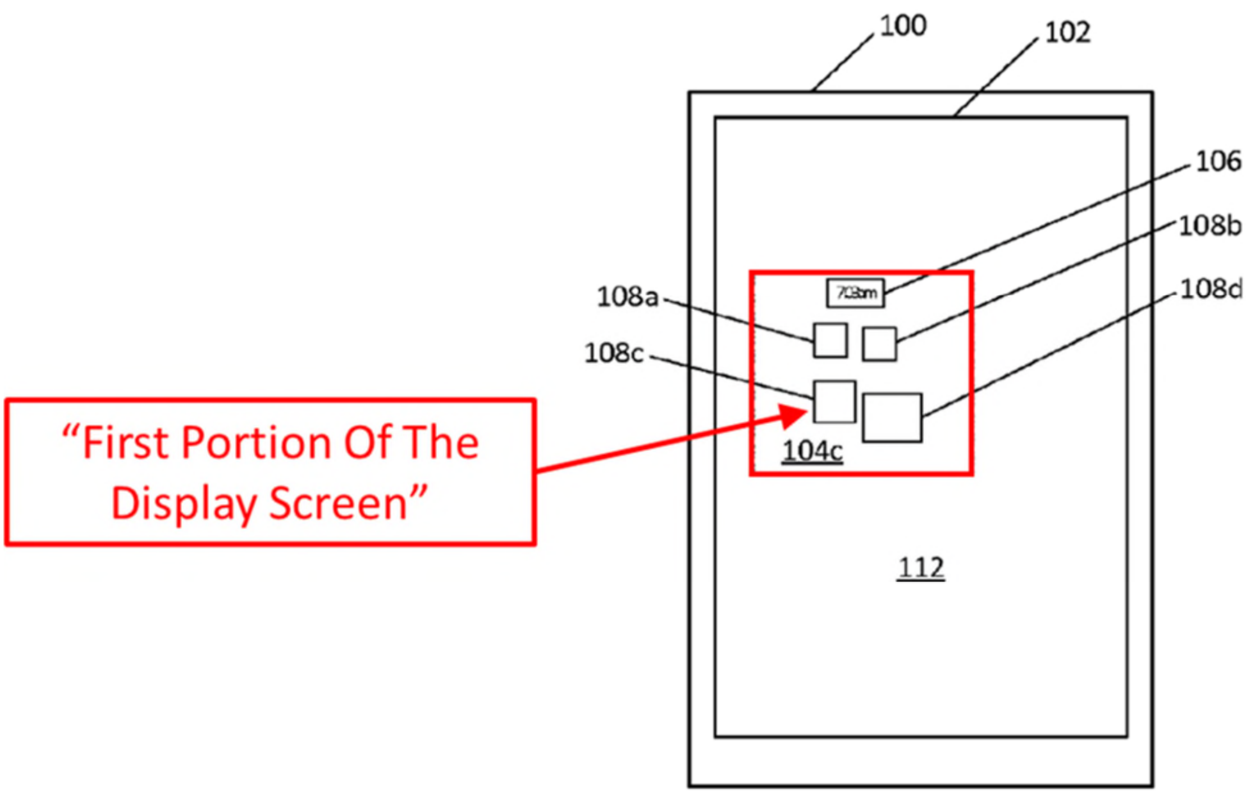


FIG.1C

Id., ¶84. A composite of the three previous annotated versions of Fig. 1C, showing the yellow-highlighted "first information," purple-highlighted "available display area" and red-boxed "first portion" is as follows:

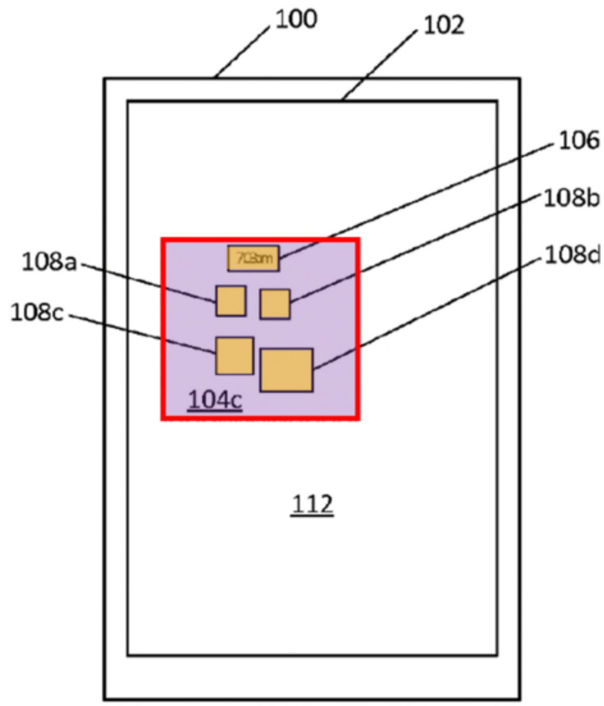


FIG.1C

Id., ¶85.

As discussed, *Yang* teaches that the recited "available display area" has associated sensors. *Yang*, ¶19. Also, in the embodiment shown in *Yang* Figs. 1A/1C, the images 108a-108d and clock 106 are presented at a reduced-size when displayed in reduced-size displaying area 104c. Wolfe, ¶86.

Finally, *Yang* also teaches that the embodiment illustrated in Fig. 1C is a "configuration having a plurality of portions," as recited in the claim. As is well understood, the term "plurality" means "more than one." *Aug. Tech. Corp. v. Camtek, Ltd.*, 655 F.3d 1278, 1286 (Fed. Cir. 2011). The area of Yang's display screen 102 encompassing reduced-size displaying area 104c corresponds to the

recited "first portion," and inactive area 112 is another portion of the same display screen 102. Yang's Fig. 1C is thus a "configuration having a plurality of portions." Wolfe, ¶87. Accordingly, *Yang* discloses all limitations of this element. *Id*., 80-87.

[1b] "the first portion of the display screen and associated sensors, which is configured in a powered-on state to perform display functions and receive user input, and"

Yang discloses this element. Wolfe, ¶¶88-94. As discussed, the screen area occupied by *Yang's* reduced-size displaying area 104c corresponds to the "first portion of a display screen" recited in the claim. *Yang* teaches that reduced-size displaying area 104c is "configured in a powered-on state to perform display functions." In particular, *Yang* teaches that reduced-size displaying area 104c both "perform[s] display functions and receive[s] user input," just as the claim requires. *See, e.g.*, Yang, ¶53.

First, the images 108a-108d and clock 106 are displayed within reduced-size displaying area 104c. *See Yang*, ¶21 ("…original size displaying area 104a may be adjusted to the size and position of a **reduced size displaying area … 104c….** "). Thus, *Yang* plainly teaches that display screen 102 "perform[s] display functions," as required by the claim. Wolfe, ¶89. Moreover, *Yang* teaches that one display type it can use is OLED technology. *Yang* ¶19. As a POSITA would know, and *Yang* teaches, pixels of an OLED display can only perform display functions when

"powered-on," as also required by the claim. Wolfe, ¶90; *Yang*, ¶28 ("…OLED pixels emit photons in response to receiving an electrical charge….").

Yang not only teaches that reduced-size displaying area 104c is powered-on to perform display operations, but also that the touch sensors associated with reduced-size displaying area 104c "receive user input," as the claim requires:

> In an embodiment, **display 102 operations (if any) may be functional within adjusted reduced size displaying area 104b, 104c, 104d, or 104e of the memorized ASM screen**. For example, if extracted interface image 108a displayed in memorized reduced size displaying area 104d or 104e is a selectable icon, **the user may select image 108a to activate a PED 100 feature (*e.g.*, camera, GPS) or an application program**.

Yang, ¶53. *Yang* contains other teachings confirming that the touch sensors associated with its reduced-size displaying area 104c are "powered-on" and "receive user input." For example, *Yang* teaches that a user can use fingers to "pinch" corners of reduced-size displaying area 104c to make the displaying area larger or smaller:

> Reducing techniques include, without limitation, **on a touch screen using one or more fingers to pinch together opposite corners of the displaying area 104a/104c**…. Reducing techniques may reduce the extract of the interface so that it keeps the same proportions while simulated in small scale. **Reduced size displaying area**

> **104c may be enlarged by an action opposing the action taken for reduction**.

Yang, ¶42. A POSITA would understand that such gestures require that sensors associated with reduced-size displaying area 104c be "powered-on" and "receive user input." Wolfe, ¶¶91-93.

Indeed, without the sensors associated with reduced-size displaying area 104c "receiv[ing] user input," the processing elements of the portable electronic device would receive no information regarding how to size the extract, and thus, the size of the extract would not change. That this is the case is seen by the fact that the display screen area outside of reduced-size displaying area 104c (labeled as "inactive area 112") can be disabled and be non-responsive to any user input by powering-off the sensors in some embodiments. *Yang*, ¶¶19, 23, 47, and, in particular, ¶53 ("In contrast, memorized **inactive area 112 may be disabled or non-responsive to display 102 operations**."). Thus, the only touch sensors in this embodiment of *Yang* that are capable of "receiv[ing] user input" are those associated with reduced-size displaying area 104c. In fact, *Yang's* claim 8 makes this explicit, as it recites "The method of claim 1 further comprising, **responding to a touch screen input corresponding to a position within the extract**, and not responding to a touch screen input corresponding to a position in the inactive area of the display screen." And finally, a POSITA would understand that for the sensors associated with *Yang's*

reduced-size displaying area 104c to "receive user input," such sensors would have to be "powered-on." Wolfe, ¶94. Accordingly, *Yang* discloses all limitations of this element. *Id*., 88-94.

[1c] "a second portion of the display screen and associated sensors, which is configured in a powered-off state and incapable of receiving user input;"

Yang discloses this element. Wolfe, ¶¶95-101. As discussed in Section V.D.1.[1a], *Yang's* Fig. 1C embodiment is a "configuration having a plurality of portions." *Yang* teaches that the portion of its display screen 102 not displaying reduced-size displaying area 104c is what it calls "inactive area 112."

> Referring to FIG. 1B through FIG. 1E, **inactive area 112** is proximate least a portion of the perimeter of reduced size displaying area 104b, **104c**, 104d, or 104e, and extends to the periphery or edge of the display 102 screen. In other words, **inactive area 112 corresponds to the part of the display 102 screen that is not displaying an extract of an interface in reduced size displaying area** 104b, **104c**, 104d, or 104e.

Yang, ¶23. *Yang's* inactive area 112 shown in Fig. 1C corresponds to the recited "second portion of the display screen and associated sensors." Wolfe, ¶¶95-96. Fig.

1C has been annotated below to show the "second portion of the display screen" hatched in blue:"[5]

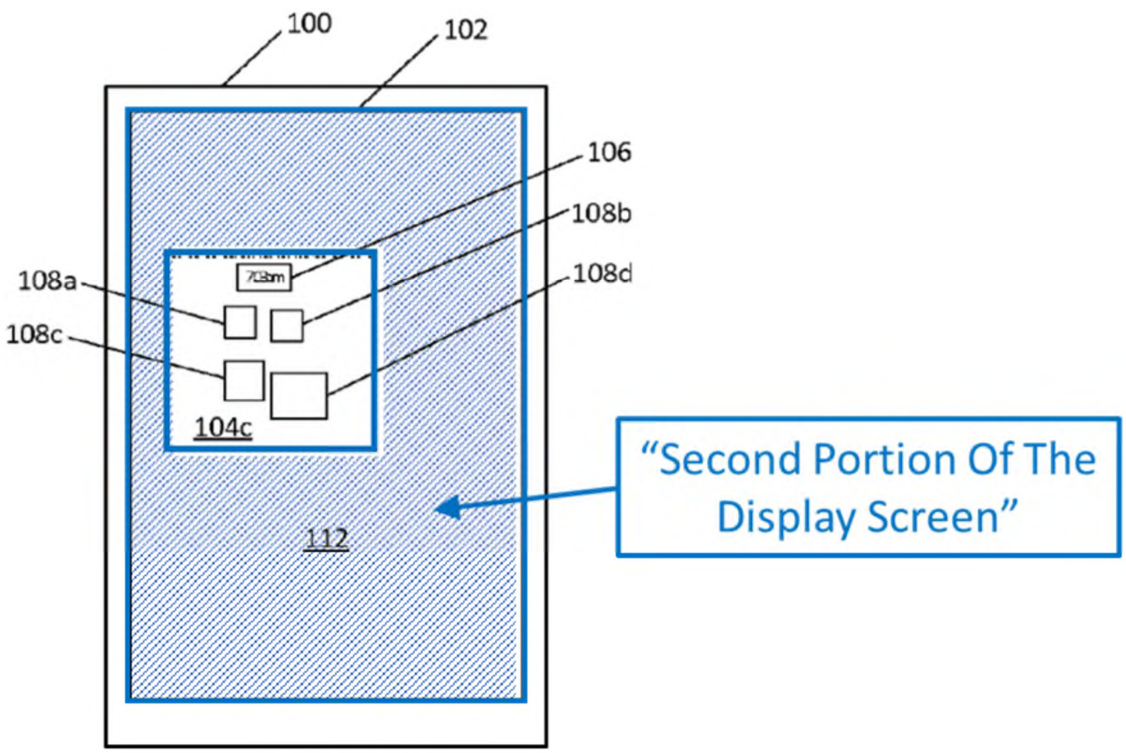


FIG.1C

Id., ¶96.

Yang also teaches that inactive area 112 is "configured in a powered-off state" as required by the claim because it states that inactive area "may be turned off." *Yang*, ¶23. Wolfe, ¶97.

In addition, *Yang* teaches that its display 102 includes touch sensors. *See Yang*, ¶19. A POSITA would understand that *Yang's* display 102 includes touch

[5] Reduced size displaying area 104c is not included in the recited second portion.

sensors for the entire display screen area and that therefore inactive area 112, *i.e.*, the recited "second portion," has "associated sensors," as required by this claim element. Wolfe, ¶98.

A POSITA would understand *Yang* to teach that the touch sensors associated with its inactive area 112 (*i.e.*, the recited "second portion") are in a "powered-off state" since *Yang* teaches that inactive area 112 in its Fig. 1C embodiment "may be turned off, at rest, or otherwise not available for active use." *Yang*, ¶23. Thus, *Yang* teaches that its inactive area 112 can be "in a powered-off state," as required by this claim element. *See* Wolfe, ¶99.

Indeed, *Yang* teaches that its inactive area 112 may be "disabled" and "may not respond" to "a touch command in inactive area 112:"

> In contrast, memorized **<u>inactive area 112 may be disabled</u>** or non-responsive to display 102 operations. **<u>For example, if the user tries to input a touch command in inactive area 112, PED 100 may not respond</u>**.

Yang, ¶53. Thus, a POSITA would understand *Yang* to teach that the touch sensors associated with its inactive area (which corresponds to the recited "second portion") are in a "powered-off state" when the display is as shown in Figure 1C since inactive area 112 can be "disabled" and "not respond" to "a touch command in inactive area 112." Wolfe, ¶¶100-101.

To the extent Dareltech argues that *Yang* does not teach having its touch sensors associated with inactive area 112 being in a "powered-off state" as required by the claim, a POSITA would have understood that *Law* teaches this limitation because *Law* discloses that touch sensors associated with unused portions of a display screen can be "deactivated" by removing voltage from them. *Law*, ¶32. In particular, *Law*, discloses embodiments of a device that can reduce its power consumption by reducing or eliminating the touch sensitivity of a touchscreen display. *Law* discloses a display having touch sensors 112, 114, 116 and 118, as can be seen in Fig. 1, which are annotated below in red:

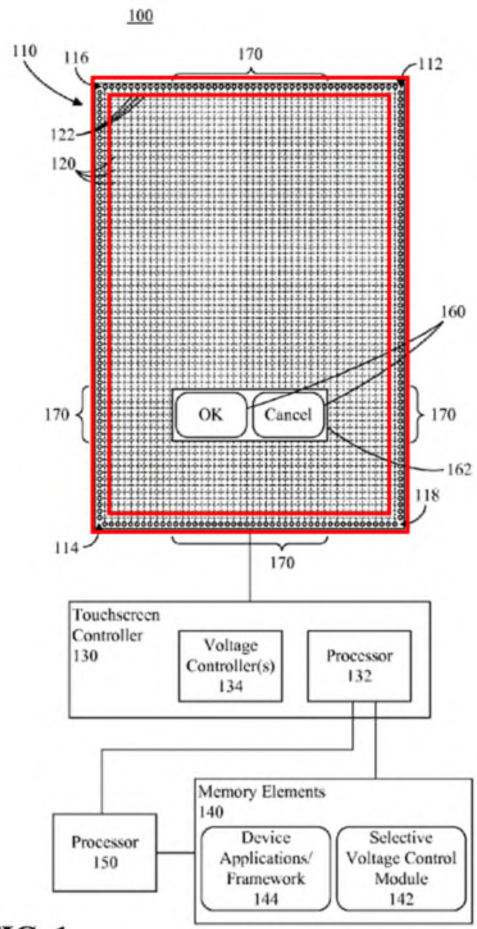


FIG. 1

Wolfe, ¶102. A POSITA would understand that this arrangement of touch sensors is common. *Id*.

Like *Yang*, *Law* teaches that power consumption of touchscreen devices can be reduced by making active portions of the display screen responsive to user input while making unused portions of the display screen non-responsive to user input. *Law's* touchscreen in Fig. 1 has a region 162 containing two icons 160 (*i.e.*, "information" in the context of the claims of the '427 patent). *Law*, ¶31. In the context of the '427 patent, region 162 corresponds to the claimed "first portion" and

the remaining portion of the screen corresponds to the claimed "second portion." Wolfe, ¶103.

Law further teaches that its touch sensors 170 (also shown in Fig. 1) are "associated" with the first portion:

> In response to identifying the object(s) 160 presented on the touchscreen 110, via the voltage controller 134, the **processor 132 can selectively apply a first level of voltage to touch sensors 170 configured to detect a touch event in the region 162** of the touchscreen 110 where the object(s) 160 is/are visually presented.

Law, ¶32; Wolfe, ¶¶104-105. Similarly, *Law* teaches that the remaining touch sensors are "associated" with the second portion, *i.e.*, the screen area outside of region 162:

> **The processor 132 can apply a second level of voltage to the touch sensors 112-118 (excluding the touch sensors 170)** configured to detect a touch event in one or more other regions of the touchscreen where the object(s) 160 is/are not visually presented.

Id. Finally, *Law* describes an embodiment where the touch sensors associated with the area outside of region 162 (*i.e.*, the "second portion") can be "deactivated" by removing voltage from them:

> In another arrangement, **voltage can be removed from the touch sensors 112-118 (excluding the touch sensors**

> **170)**. **In the case that the voltage is removed from the touch sensors 112-118 (excluding the touch sensors 170) the touch sensors 112-118 (excluding the touch sensors 170) can be deactivated**.

Law, ¶32; *see also id*., ¶10. A POSITA would understand that removing voltage from touch sensors to deactivate them results in those touch sensors being "powered-off," as required by the claim. Wolfe, ¶106. Thus, *Law* explicitly teaches that the touch sensors associated with its "second portion" are "in a powered-off state and incapable of receiving user input," as required by the claim.

(i) The Rationale for Combining *Yang* and *Law*

Samsung submits that it need not show a specific motivation to combine *Yang* and *Law* because *Law* is being used merely to provide a specific example of the teachings in *Yang*, *i.e.*, that "disabling" touch sensors means powering-them off. *Realtime Data, LLC v. Iancu*, 912 F.3d 1368, 1373 (Fed. Cir. Jan. 10, 2019) (holding the Board need not require a motivation to combine a secondary reference where the secondary reference is not being used to teach a limitation but rather to explain the teachings of a primary reference).

However, even if a rationale for the combination is required, a POSITA would have found it obvious to use *Law*'s means of powering-off its touch sensors (removing voltage input thereto) with the touchscreen display of *Yang*, resulting in a portable battery-powered device such as a mobile phone that reduces power

consumption by powering-off touch sensors for unused portion(s) of a display device. Wolfe, ¶108. *Yang* specifically teaches that power consumption can be reduced by disabling a portion of a touchscreen from receiving user input such that the device will not respond when user inputs a touch command in inactive area. *Yang*, ¶53. A POSITA would have understood that this included options for powering-off the sensors because removing power to a sensor is the most direct way of disabling the sensor and saving battery life. Wolfe, ¶109. This method of disabling a sensor is explicitly reinforced by *Law*, which provides the same teaching and further explains specific options for accomplishing this power reduction, *i.e.*, that touch sensors can be disabled by removing voltage from them, *e.g.*, by powering them off. *Law*, ¶32. Using the knowledge of how to disable, *e.g.*, powering-off, touch sensors, as known by a POSITA and confirmed by *Law*, a POSITA would understand that *Yang's* touch sensors associated with its inactive area 112 are also powered-off. Wolfe, ¶109.

Moreover, the combination involves the mere substitution of one set of known elements (the touch sensors and controller disclosed in *Law*) for others (the touch sensors and controller disclosed in *Yang*) to obtain predictable results, namely the substituted *Law* touch sensors and controller being used by the *Yang* battery-powered device, where the touch sensors are turned off, as in *Law*. Wolfe, ¶110.

In addition, a POSITA would have found that combining *Yang* with *Law* would have been simply combining known techniques of disabling touch sensors in a portion of a touchscreen display with the known technique of turning those sensors off (*i.e.*, removing voltage therefrom) in a predictable manner. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416-17 (2007). Such combination achieves the express goals of both *Yang* and *Law* of reducing system power requirements, where *Law* discloses reducing power consumption by powering-off touch sensors by removing voltage input thereto and *Yang* discloses a more generalized disabling of touch sensors that would naturally include the *Law* technique. Wolfe, ¶111. The *Yang-Law* system also would have been straightforward to implement because both receive touch inputs on a touchscreen display and both utilize processors, touch sensors and software. *Id*. Thus, the POSITA would have had a reasonable expectation of success in combining the references in the manner claimed in the '427 patent. *Id*.

Finally, to the extent *Yang's* teaching that "inactive area 112 may be disabled or non-responsive to display 102 operations" and that "if the user tries to input a touch command in inactive area 112, PED 100 may not respond" (*Yang*, ¶53) do not require powering-off of its touch sensors, a POSITA would have found it obvious to incorporate *Law's* controller and touch sensors that are completely powered-off into *Yang's* device to further reduce power consumption in *Yang*. Wolfe, ¶112; *DyStar*

Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1368 (Fed. Cir. 2006) (finding motivation to combine exists "[when] the combination of references . . . is more desirable, for example because it is . . . cheaper . . . or more efficient.").

Thus, a POSITA would have been motivated to combine *Law's* teachings regarding powering-off touch sensors associated with display portions containing no images. Wolfe, ¶113. Thus, *Yang* in view of *Law* discloses all limitations of this element. Wolfe, ¶¶95-113.

[1d] "responsive to a user indication in the in the first portion, adding the second portion to the available display area by transitioning the second portion to the powered-on state to perform display functions and receive user input;"

Yang discloses this element. Wolfe, ¶¶114-127. *Yang* teaches at least two different ways a user indication in reduced-size displaying area 104c (corresponding to the recited "first portion") can add inactive area 112 (corresponding to the recited "second portion") to the available display area. One way is for the user to place fingers in reduced-size displaying area 104c and use a "pinch" gesture in an outward direction (referred to herein as a "spreading gesture"). Wolfe, ¶114. As *Yang* states, such a spreading gesture will enlarge reduced-size displaying area 104c: "**Reduced size displaying area 104c may be enlarged by an action opposing the action taken for reduction.**" *Yang*, ¶42. A POSITA would understand that a user could

use such a spreading gesture until what was previously reduced-size displaying area 104c encompasses the entire screen area. Wolfe, ¶¶114-115.

The result of a spreading gesture can be seen in the annotated drawings below. *Id.*, ¶116 As seen in annotated Fig. 1C on the left, reduced-size displaying area 104c, highlighted in purple, corresponds to the available display area recited in element [1a], discussed above.[6] As can be seen on the right side, by using a spreading gesture to enlarge the first information shown in reduced-size displaying area 104c, inactive area 112 (*i.e.*, the claimed "second portion") has been added to the available display area (also shown purple-highlighted):[7]

[6] Claim element [1a] requires that "available display area" comprise the 'first portion" of the display screen. Thus, left-side annotated drawing shows the purple-highlighted "available display area" and the red-boxed "first portion" as encompassing the same screen area.

[7] Because this claim element requires that the "second portion" be added to the "available display area," right-side annotated drawing shows the purple-highlighted "available screen area" encompassing the entire screen.

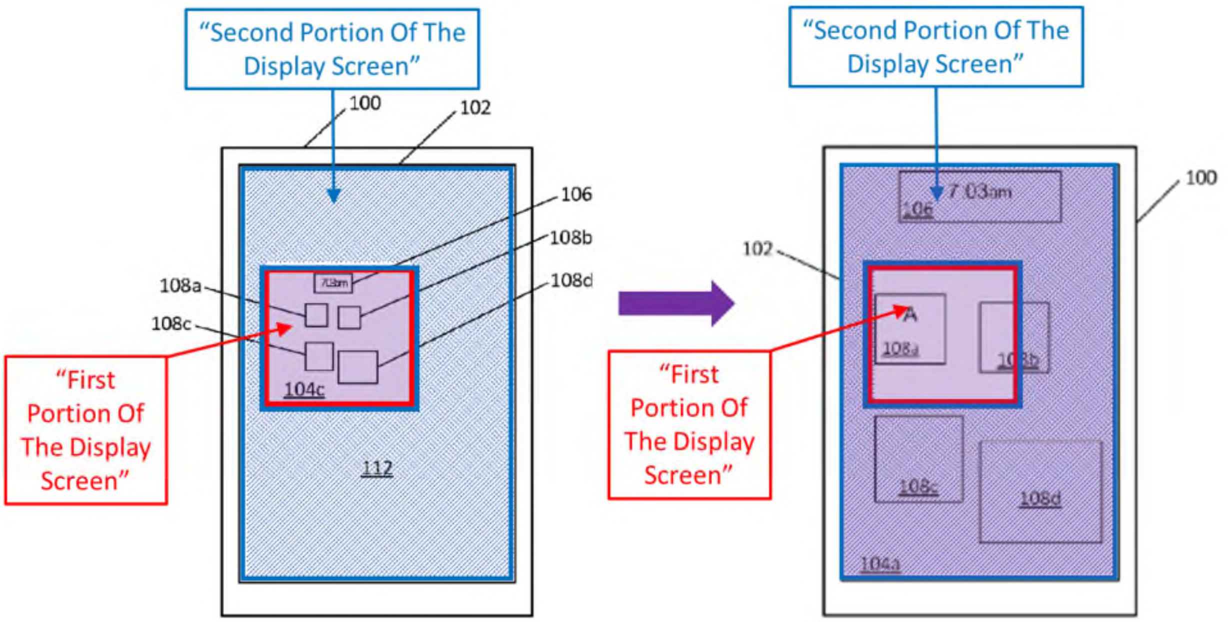


FIG.1C FIG.1A

Wolfe, ¶116. Thus, one way in which *Yang* teaches that a user indication in reduced-size displaying area 104c will result in its system adding inactive area 112 to the available display area is through a spreading gesture.

The second way *Yang* teaches that a user indication in reduced-size displaying area 104c (corresponding to the recited "first portion") adds inactive area 112 (corresponding to the recited the "second portion") to the available display area is described in the context of Fig. 3. Wolfe, ¶117. Fig. 3 is a flow chart illustrating how *Yang's* processing elements running the software described therein (what *Yang* calls its "display adjustment module") from adjusted screen mode ("ASM") (*e.g.*, Fig. 1C) to original screen mode ("OSM") (Fig. 1A). For convenience, Fig. 3 is reproduced below:

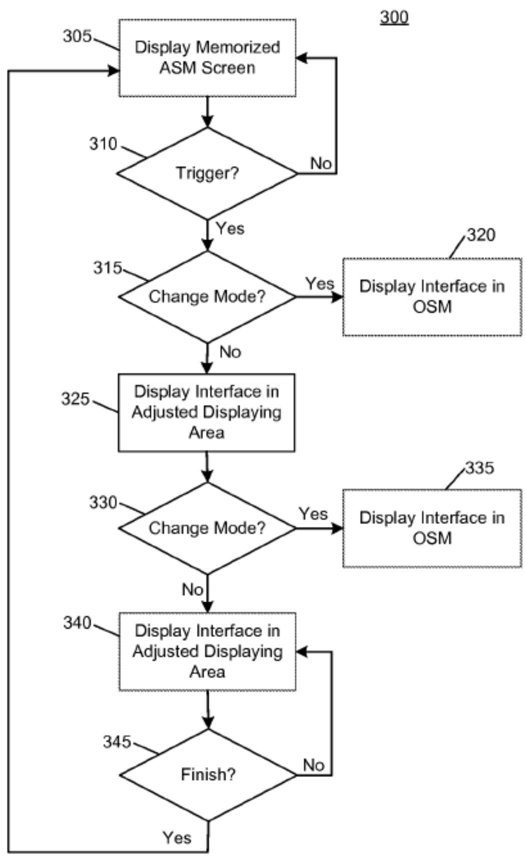


FIG. 3

At box 305, *Yang's* portable electronic device is in ASM, one example of which is shown in Fig. 1C:

> Referring to block 305, while in ASM, a memorized ASM screen (*e.g.*, memorized displaying area and inactive area) may be displayed on display 102 screen. In an embodiment, display 102 operations (if any) may be functional within adjusted reduced size displaying area 104b, 104c, 104d, or 104e of the memorized ASM screen.

Yang, ¶53. As is seen, *Yang* discloses that display operations can be functional within the various reduced-size displaying area embodiments, including the

embodiment shown in Fig. 1C. And as discussed regarding claim element [1c], while in this state, inactive area 112 does not respond to user input. *Id*; *see also* Wolfe, ¶¶118-119.

The flowchart in Fig. 3 advances to diamond 310, where the method determines whether there has been a "trigger" that would cause *Yang's* device to transition from ASM to OSM (*e.g.*, transition from a display as in Fig. 1C to a display as in Fig. 1A). *Yang*, ¶54; Wolfe, ¶120. *Yang* teaches that there are various triggers, one of which is selecting an icon (*e.g.* one of images 108a-108d):

> In diamond 310, display adjustment module may determine if a triggering event has occurred. Many different events may constitute a triggering event. For example, **a triggering event may include a manual input for disabling ASM, selecting an image such as an icon**….

Yang, ¶54. *Yang* states that reduced-size displaying area 104c (shown in Fig. 1C) contains images 108a-108d, which *Yang* states can be icons. *Id*., ¶20. Thus, one of *Yang's* triggers used to transition from ASM to OSM is tapping on an icon within reduced-sized displaying area 104c. Thus, *Yang* teaches that the transition from ASM to OSM can be "responsive to a user indication in the first portion," *i.e*., a user indication within reduced-size displaying area 104c. Wolfe, ¶121.

If *Yang's* system detects such a trigger, the system advances to diamond 315, where *Yang's* system determines whether to change its mode. *Yang*, ¶54 ("If, however, the event is a triggering event, the process may continue to diamond 315."). *Yang* further teaches that if the user selects an icon when in ASM, the system in diamond 315 will cause the display to switch to original screen mode so that the full user interface is displayed:

> Using selecting icon 108a as an example of activating a PED 100 feature or application, **<u>in diamond 315 the display adjustment module may cause the display 102 to automatically switch to OSM (block 320) so that a full sized, functioning user interface for the activated feature/application program is displayed (*e.g.*, displaying area 104a)</u>**.

Yang, ¶55. Wolfe, ¶122. According to *Yang*, one such example of a "feature/application program" is a home screen. *Yang*, ¶55. And *Yang* explicitly teaches that Fig. 1A shows a home screen displayed in original screen displaying area 104a:

> In OSM, a displaying area such as an original displaying area 104a can be in a default configuration such as occupying all or almost all of display 102 screen. **<u>As shown in FIG. 1A, an original interface such as a home screen can be displayed in the displaying area 104a</u>**.

> The original interface shown in FIG. 1A includes a clock area 106 and images 108a, 108b, 108c, and 108d.

See Yang, ¶20. *See also* Wolfe, ¶123.

Thus, *Yang* teaches that its system will respond to a user tapping on an icon within reduced-size displaying area 104c (meeting the claim requirement "responsive to a user indication in the in the first portion") by transitioning from ASM like in Fig. 1C to OSM like in Fig. 1A. This will look just like the annotated Figs. 1A and 1C shown above and reproduced here for convenience:

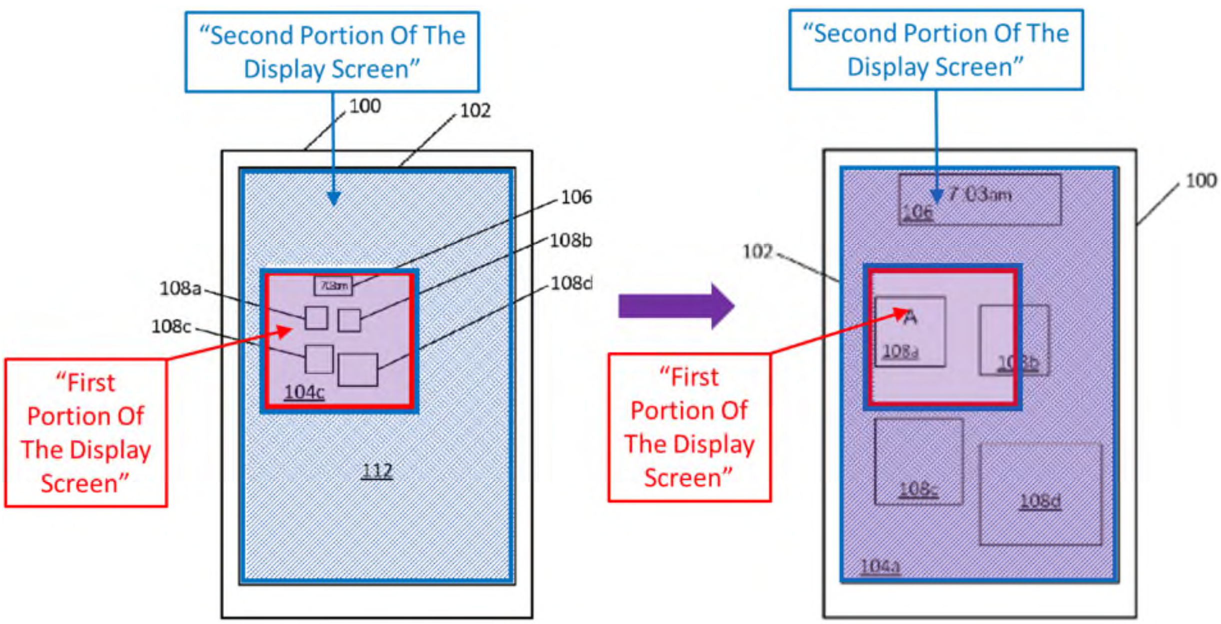


FIG.1C FIG.1A

Wolfe, ¶124. Thus, a second way *Yang* teaches that a user indication in reduced-size displaying area 104c will result in its system adding inactive area 112 to the

available display area is by tapping one of the icons 108a-108d within reduced-size displaying area 104c. *Id.*, ¶125.

Regardless of which method a user of *Yang's* system chooses to add the previously inactive area 112 to the available display area, the previously inactive area 112 (*i.e.*, the claimed "second portion"), will transition to the powered-on state to perform display functions and receive user input, as required by the claim. Should a user enlarge reduced-size displaying area 104c using a spreading gesture such that the entire home screen is displayed, as shown in Fig. 1A, the screen area that was previously inactive area 112 will, after transition, display images that can be icons (a portion of image 108b, as well as images 108c-108d) and clock 106, meaning that the recited "second portion" will be "powered-on," as required by the claim. Likewise, previously inactive area 112 will "receive user input" because a user will be able to tap on the icons that are displayed after completion of the spreading gesture to, *e.g.*, launch applications. *Id.*, ¶126.

Likewise, should a user enlarge reduced-size displaying area 104c shown in Fig. 1C using the method illustrated in Fig. 3 to display the home screen shown in Fig. 1A, the result is the same: The previously inactive area 112 (*i.e.*, the claimed "second portion") will transition to the powered-on state to perform display functions and receive user input, as required by the claim. Just as with the spreading gesture method described immediately above, the screen area that was previously

inactive area 112 will display images (*e.g.*, icons 108c-108d) and clock 106, and thus be "powered-on," as required by the claim. Likewise, previously inactive area 112 will "receive user input" because a user will be able to tap on the icon images (*e.g.*, 108c-108d) displayed in the previously inactive area 112 (*i.e.*, the "second portion") to, *e.g.*, launch applications. *Id.*, ¶127.

Accordingly, *Yang* discloses all limitations of this element. *Id.*, ¶¶114-127.

[1e] "displaying second information in the second portion;"

Yang discloses this element. Wolfe, ¶¶128-129. Regardless of how a user chooses to transition the display from what is shown in *Yang's* Fig. 1C to what is shown in Fig. 1A, "second information" is displayed in the "second portion." *Id.*, ¶128. As discussed, *Yang's* inactive area 112 shown in Fig. 1C corresponds to the claimed "second portion." Thus, when *Yang's* device transitions from displaying information as in Fig. 1C to the manner shown in Fig. 1A, the images 108c-108d, the portion of image 108b, and clock 106 shown in what had been inactive area 112 prior to transition are the recited "second information." The claimed "second information" can be seen in the annotated Fig. 1A below, highlighted in green, while the "first portion" and the "second portion" continue to be red-boxed and blue-hatched, respectively:

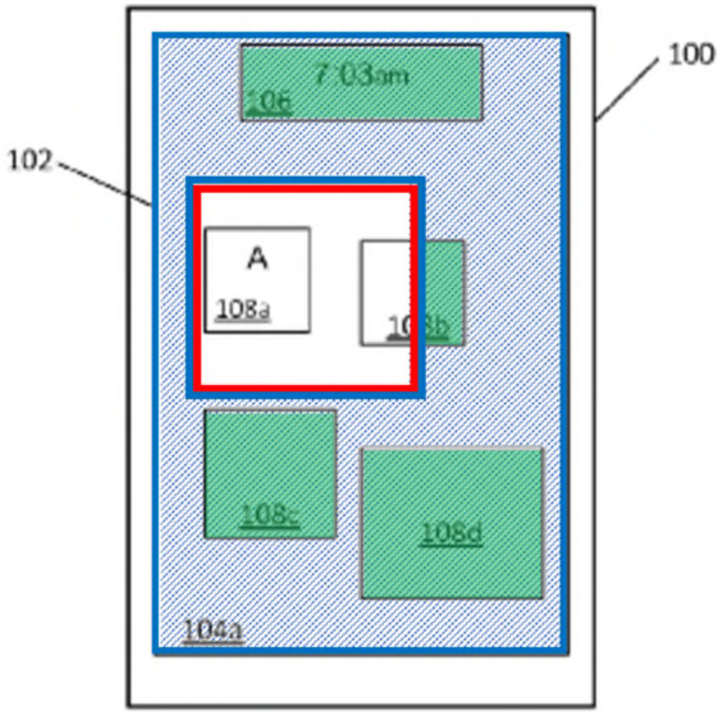


FIG.1A

Id., ¶128. Accordingly, *Yang* discloses all limitations of this element. *Id.*, ¶¶128-129.

[1f] "generating the second information by mathematically upscaling the first information,"

As discussed, the ordinary meaning of "mathematically upscaling" is "*using mathematical techniques to make a displayed image larger*." This plainly is what *Yang's* system does when it transitions from what is displayed in Fig. 1C to what is displayed in Fig. 1A. As is easily seen, the images 108c-108d (*e.g.*, icons), the portion of image 108b, and clock 106 in the "second portion" have all been enlarged,

i.e., upscaled, from their smaller representations that had been displayed in reduced-size displaying area 104c (the claimed "first portion"). *Id.*, ¶130.

The below annotated figures show that the second information (in green) has been generated by upscaling the first information (shown in yellow):

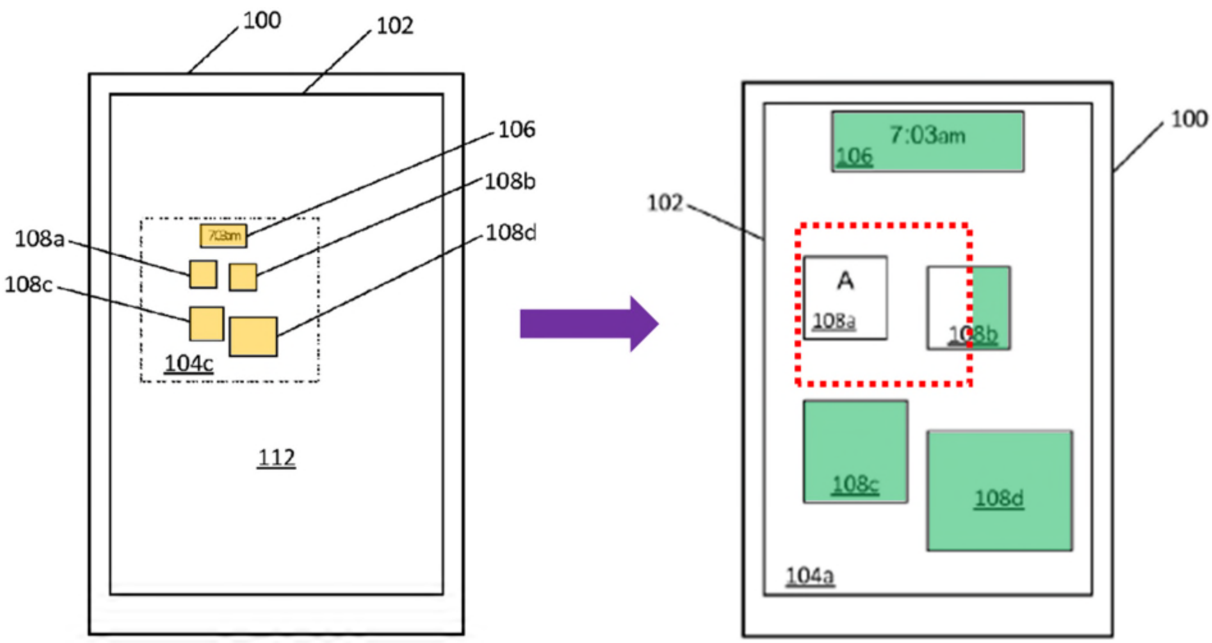


FIG.1C

FIG.1A

Id., ¶131. In addition, the second information has plainly been upscaled using mathematical techniques. *Yang* teaches that display adjustments are made by what it calls a "display adjustment module." *See, e.g.*, *Yang*, ¶52. *Yang's* display adjustment module can be part of the device's operating system. *See, e.g.*, id., ¶31; *see also* Wolfe, ¶¶132-133.

A POSITA would know that operating systems and other types of software enlarge images for display on a screen by using mathematical techniques to upscale

the image. *Id.*, ¶134, citing to *Ignatchenko,* 3:61-4:5, 4:21-44. For example, *Yang* explains that "[r]educed size displaying area 104d may be enlarged **by any enlargement technique**, which generally may be opposite a reducing technique." *Yang* ¶44. Moreover, as discussed in Section IV.D.1, the '427 patent provides no specific examples of how to perform mathematical upscaling, and thus, the disclosure in *Yang* describing processors executing software to enlarge images is indistinguishable from that in the '427 patent, and a POSITA would have understood that using processors executing software to be within the plain meaning of "mathematically upscaling." Wolfe, ¶135.

To the extent Dareltech argues that mathematically upscaling an image requires an increase in not only size but also resolution, a POSITA would have recognized that the enlargement of an image as described above in *Yang* would entail a corresponding increase in the resolution of the image, in particular to maintain the image's clarity/sharpness in enlarged form. *Id.*, ¶136, citing to *Ignatchenko*, 1:21-48, 2:58-60, 4:12-20.

[1g] "wherein the second information comprises a portion of the first information upscaled for display in both the second portion and the first portion; and"

Because element [1e] requires that the "second information" be displayed in the "second portion," this element requires that the "first information" be "upscaled for display in both the second portion and the first portion," and that the "second

information" comprise a portion of the upscaled "first information." . *Yang* teaches this, as seen in the following annotated figures:

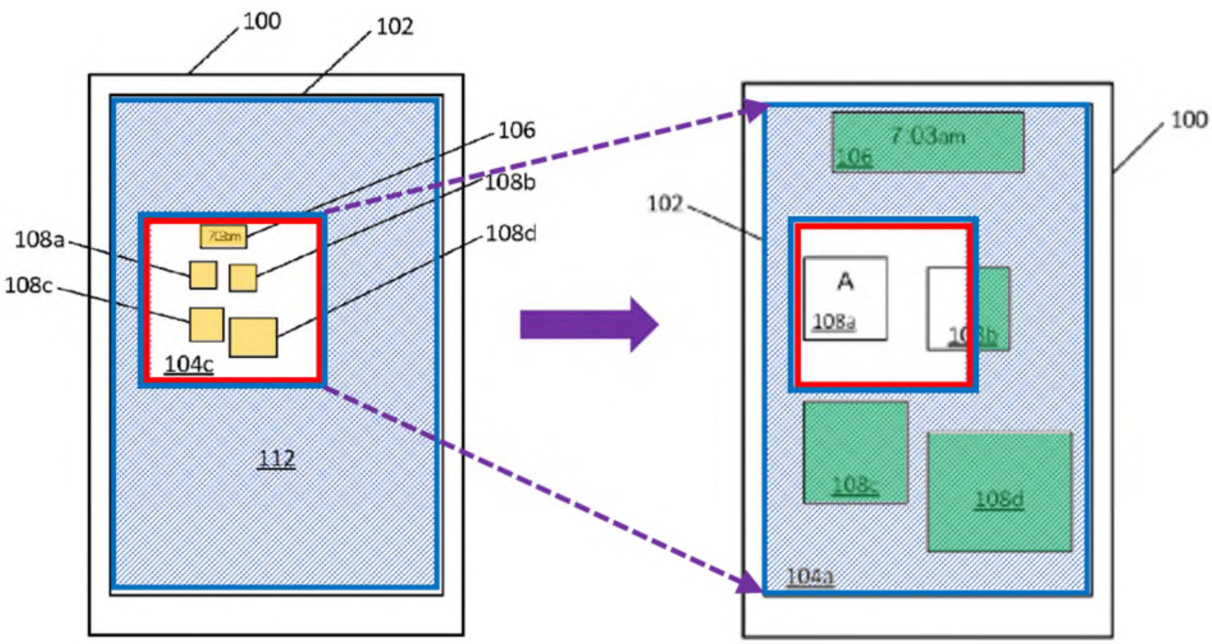


FIG.1C

FIG.1A

On the left, *Yang's* display screen is annotated to show the "first information," *i.e.*, the images within reduced-size displaying area 104c, in yellow. Reduced-size displaying area 104c itself corresponds to the recited "first portion," and is red-boxed. As also discussed, inactive area 112 (blue-hatched) corresponds to the recited "second portion." Wolfe, ¶¶137-138.

When *Yang's* device transitions from displaying what is illustrated in Fig. 1C to what is illustrated in Fig. 1A, the images 108a-108d and clock 106 comprising the "first information" are plainly "upscaled for display in both the second portion and the first portion," as discussed in Section V.D.1.[1f]. The resulting screen display is

seen on the right-hand side of the above annotated drawings. The "first portion" of the screen remains red-boxed and the "second portion" of the screen remains blue-hatched. The "second information" is green-highlighted. As seen, the "second information" comprises images 108c, 108d, clock 106 and a portion of image 108b and thus comprises only a "portion of the first information," as required by this claim element. Wolfe, ¶¶139-140.

To the extent Dareltech argues that element [1g] requires the "second information" (*i.e.*, not the first information) be displayed "in <u>both</u> the second portion <u>and</u> the first portion," such an argument would be contrary to the plain language of the claim element, which clearly requires that it is the "first information" that is upscaled for display in both first and second portions. Wolfe, ¶141. In addition, element [1e] recites "displaying second information in the second portion" while saying nothing about displaying second information in the first portion, which is thus contrary to Dareltech's potential read of the element [1g], while element [1f] confirms that it is the "first information" that is upscaled for display in both portions. *Id*.

Regardless, even under this mistaken interpretation, *Yang* still discloses the element. For example, by classifying images 108a, 108c, 108d, and clock 106 as the "second information," as shown below, the second information is displayed in "<u>both</u>

the second portion <u>and</u> the first portion" (e.g., 106 in second portion and 108a in first portion). *Id.*, ¶142.

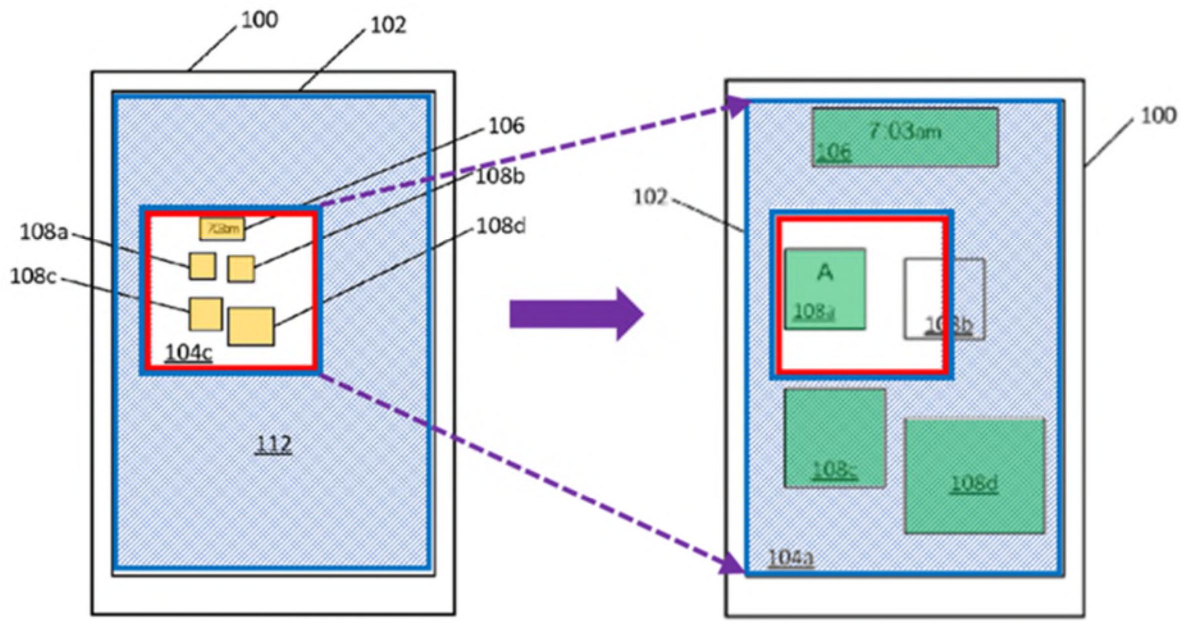


FIG.1C

FIG.1A

Accordingly, *Yang* discloses all limitations of this element. *Id.*, ¶137-143.

[1h] "displaying third information in the first portion, wherein the third information comprises a portion of the first information upscaled for display in both the second portion and the first portion."

As with element [1g], because this element requires that the "third information" be displayed in the "first portion," this element requires that the "first information" be "upscaled for display in <u>both</u> the second portion <u>and</u> the first portion," and that the "third information" comprise a portion of the upscaled "first

information." Wolfe, ¶¶145-151. *Yang* teaches this, as seen in the following annotated figures:

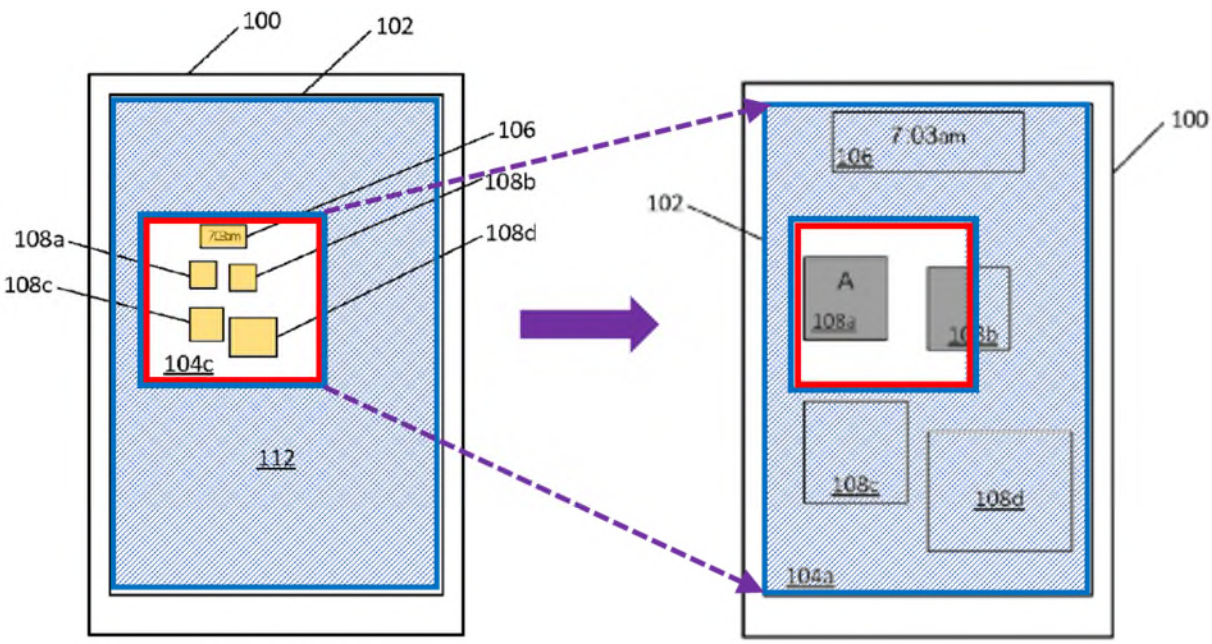


FIG.1C

FIG.1A

As discussed in the context of element [1g], the left-side of this illustration shows *Yang's* display screen annotated to show the "first information," *i.e.*, the images within reduced-size displaying area 104c, in yellow. Reduced-size displaying area 104c itself corresponds to the recited "first portion," and is red-boxed. Inactive area 112 (blue-hatched) corresponds to the recited "second portion." *Id.*, ¶¶144-145.

When *Yang's* device transitions from what is displayed in Fig. 1C to what is displayed in Fig. 1A, images 108a-108d (and clock 106) comprising the "first information" are "upscaled" to fill screen 102, as discussed in Section V.D.1.[1f]. The resulting display is seen on the right-hand side of the above annotated drawings.

The "first portion" of the screen remains red-boxed. The "third information" is gray-highlighted. As seen, the "third information" comprises image 108a and a portion of image 108b. In this case, images 108c, 108d, clock 106 and a different portion of image 108b are not included in the "third information. Thus, the "third information" comprises a "portion of the first information," as required by this claim element. Wolfe, ¶¶146-147.

To the extent Dareltech argues that element [1h] requires the "third information," (*i.e.*, not the first information) be displayed "in both the second portion and the first portion," such an argument would be contrary to the plain language of the claim element, which clearly requires that it is the "first information" that is upscaled for display in both first and second portions. *Id.*, ¶148. Indeed, this element [1h] recites "displaying third information in the first portion," which is contrary to Dareltech's potential read of this element, while element [1f] confirms that it is the "first information" that is upscaled for display in both portions. *Id.*

Regardless, even under this mistaken interpretation, *Yang* still discloses the element. For example, by classifying image 108b as the "third information" as shown below, the third information has been upscaled from the first information and is further displayed in "both the second portion and the first portion." *Id.*, ¶149.

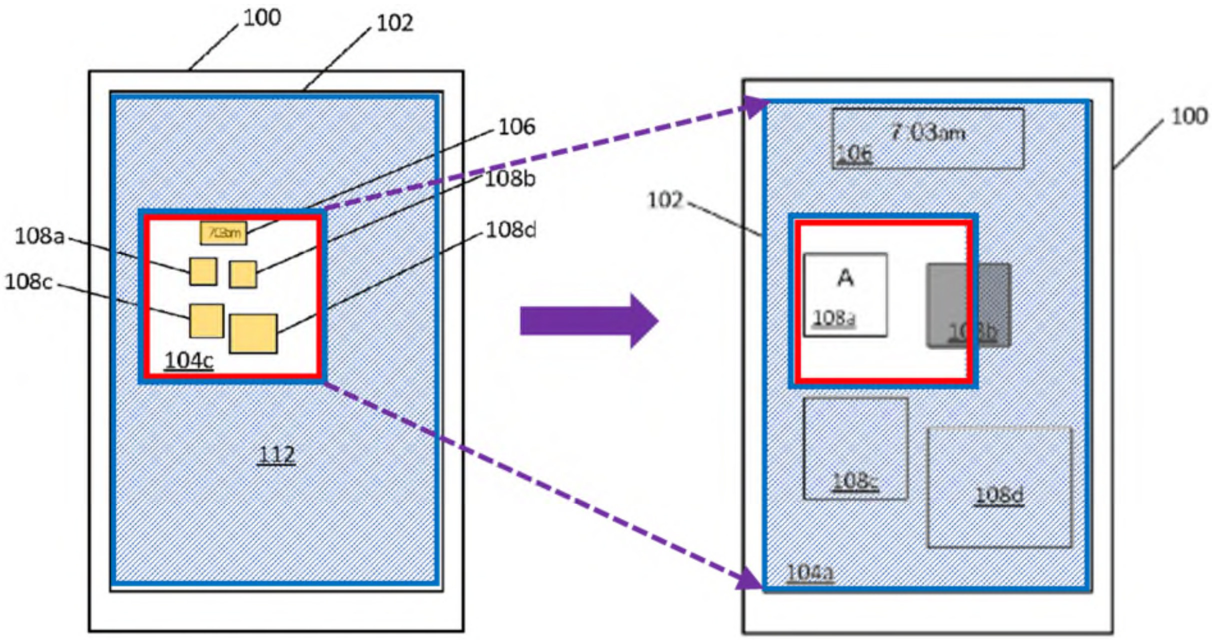


FIG.1C

FIG.1A

Accordingly, *Yang* discloses this element, and claim 1 is rendered obvious by *Yang* in view of *Law*. *Id.*, ¶¶144-151.

2. Claim 2

[2a] "The method of claim 1, further comprising: receiving a graphical content data structure comprising content for display in the available display area; and"

Yang discloses this element. Wolfe, ¶¶152-163. First, *Yang* teaches that it uses data structures. *Yang*, ¶86. And *Yang* teaches that the images displayed on its screen are rendered by processing elements that convert bitmaps into signals for display:

> [A] display adaptor may include one or more graphics processing units (GPUs) and/or one or more controllers.

> **<u>The display adaptor may process data for graphics rendering and may convert rendered patterns (*e.g.*, bitmap) into signals for display 102 screen</u>**. This is but one high-level example of how images may be rendered on display 102 screen; an embodiment is not limited by how images are rendered on display 102.

Id., ¶30. A POSITA would know that bitmaps are data structures:

> Bitmap *n*. A data structure in memory that represents information in the form of a collection of individual bits. A bit map is used to represent a bit image.

Ex. 1008, p. 61. *See also* Wolfe, ¶¶153-154.

The ordinary meaning of the term "graphical content data structure" is "*an organized collection of graphics data*." *See* Section IV.D.2. The graphics data can be a single data value or can be a data structure in and of itself, *i.e*., a data structure can be an organized collection of smaller data structures. Wolfe, ¶155.

Dr. Wolfe provides an apt analogy. *See Id.*, ¶156. A mailing list can be stored within a data structure. In this example, the mailing-list data structure is an organized collection of names and addresses. Each name or address is an element. And each of the names consists of an organized collection of letters. The letters are both elements of the name data structure and also elements of the mailing-list data structure. The mailing list data structure includes a variety of elements of different sizes including the names, the addresses, and the letters that comprise them.

The data structures disclosed in *Yang* have the same characteristics. Each bitmap representing an image such as images 108a or 108b is a data structure. *Yang* ¶30. A POSITA would know that each is comprised of an array of pixel color values (an organized collection of data) that represents the image appearance. These pixel color values are elements of the bitmap data structure. Wolfe, ¶157. Each pixel color value consists of a set of subpixel values representing individual colors or transparency. *Yang* ¶¶25-27, 47. These subpixel values are elements of the bitmap as well. Wolfe, ¶157.

Additionally, *Yang* includes a user interface (*e.g.* user interface 66) that incorporates a set of bitmaps. *Yang*, ¶¶83-84. For example, Yang describes that "the graphical user interface 66 can provide the display manager 64 with data that describes the appearance and position of windows, icons, control elements, and similar types of user interface objects." *Id.*, at ¶83. A POSITA would also know that this user interface is also a data structure that incorporates bitmaps, pixel color values, and subpixel values as elements. Wolfe, ¶158. Any of these data structures disclosed by *Yang* may be used to satisfy the graphical content data structure element of the dependent claims. *Id.*, ¶159.

Moreover, as discussed, *Yang* teaches that exemplary information displayed on its screen as images 108a-108d, shown in its Figs. 1A and 1C can be icons:

> The original interface shown in FIG. 1A includes a clock area 106 and images 108a, 108b, 108c, and 108d. **Each image 108a, 108b, 108c, and 108d may be one of text or a graphic such as, without limitation, an icon, a tile, a button, a menu item, and a photograph**.

Yang, ¶20. Thus, *Yang* teaches that its images 108a-108d and the components thereof such as bitmaps, pixel color values, and subpixel values are all elements of in the recited "graphical content data structure." Wolfe, ¶¶160-161.

Moreover, a POSITA would understand that the group of images 108a-108d can form either a set of bitmaps or one larger bitmap, which would, in either case, form a data structure. This data structure (*e.g.* graphical user interface 66), containing the bitmaps for images 108a-108d, corresponds to the recited "graphical content data structure." *Id*., ¶162.

In the various embodiments of *Yang*, and in particular the processing elements of *Yang's* device (*e.g.*, GPUs, processors etc., discussed in ¶¶30, 64-77) will receive the bitmaps, *e.g.*, the graphical content data structure for images 108a-108d, to be displayed in the "available display area." Wolfe, ¶163. As discussed, in the context of *Yang*, the "available display area" can be the entire display screen as in Fig. 1A or a reduced-size displaying area 104c as in Fig. 1C, meaning that *Yang* discloses this claim element. *Id*.

[2b] "selecting elements of the graphical content data structure for display in the available display area based at least in part on whether the second portion is in a powered-on state."

Yang discloses this element. Wolfe, ¶¶164-175. An example of an element of a graphical content data structure in the '427 patent is an icon. *See* '427 patent, 17:59-67; 8:39-42; Figs 7-8. As discussed in Section V.D.2.[2a], *Yang* discloses bitmaps representing icons, *e.g.*, images 108a-108d, which a POSITA would understand are the same as the elements of a graphical content data structure disclosed in the '427 patent. In addition, a POSITA would understand that *Yang's* bitmaps include pixel color values, and subpixel values which are also elements of this graphical content data structure. Wolfe, ¶164.

When *Yang's* device is in the state shown in Fig. 1C, in which inactive area 112 (the recited "second portion") is powered-off, it selects bitmaps corresponding to icons 108a-108d for display in reduced-size displaying area 104c. *See, e.g., Yang* Fig. 1C. This selection is based on whether the second portion (inactive area 112) is in a powered-on state. *Yang* states that "[g]enerally, all or part (*i.e.*, an 'extract') of the original user interface shown in original size displaying area 104a may be cut (*i.e.*, extracted) and displayed in reduced-size displaying area 104b, 104c, 104d, or 104e." *See Yang*, ¶21; Wolfe, ¶165.

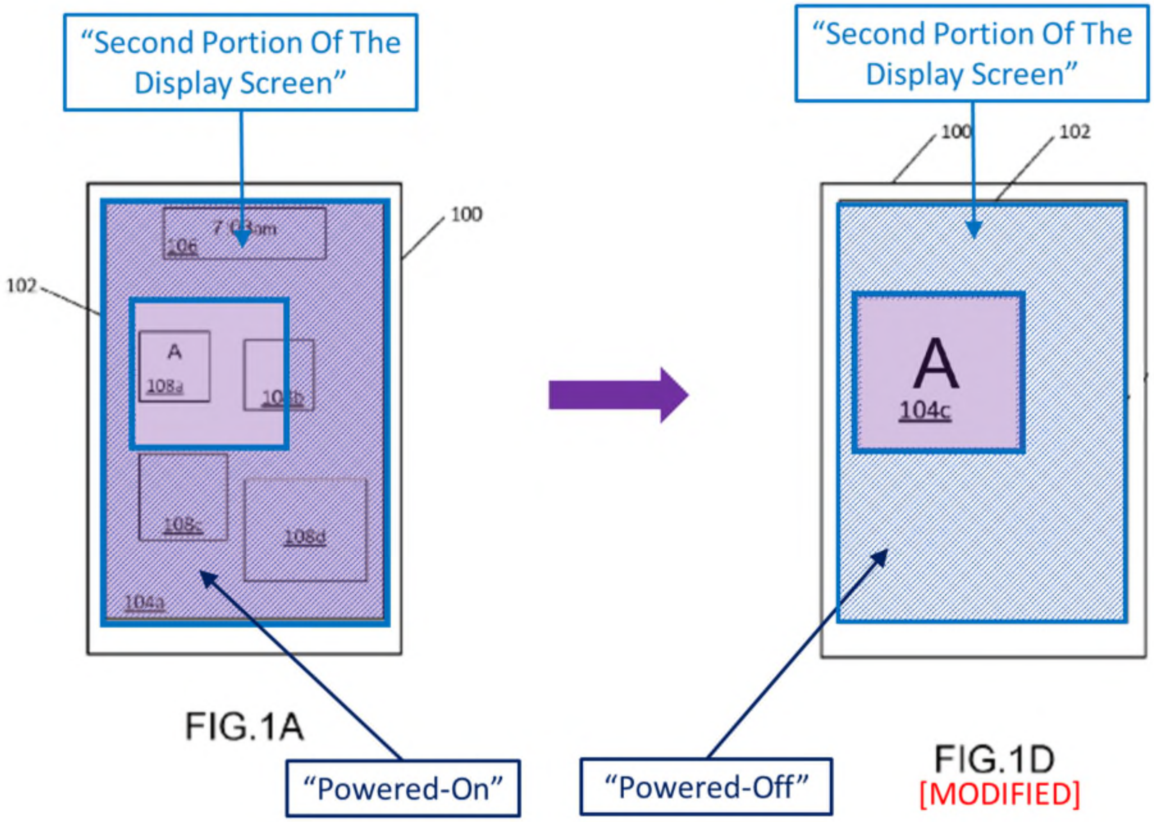
Furthermore, when the second portion (inactive area 112) is in a powered-off state, reduced-size images corresponding to icons 108a-108d are displayed in available display area 104c. *Yang* teaches that "the extract of the complete visible interface, should be reduced in size such as to reduced size displaying area 104c." *Yang*, ¶41. *Yang* further explains that "[r]educing techniques may reduce the extract of the interface so that it keeps the same proportions while simulated in small scale." *Id.*, ¶42. A POSITA would understand that the size reduction of the icons taught in *Yang* can be accomplished by selecting a subset of the pixel color values (elements of the graphics content data structure) for display. For example, selecting every other pixel color value in each row of a bitmap would display an icon image that is half as wide. This common technique would be well known at the time of the *Yang* application and would correspond to *Yang's* teaching regarding the size reduction of bitmaps. Wolfe, ¶166.

Yang discloses this limitation in a second way. As discussed, an example of an element of a graphical content data structure in the '427 patent is an icon. *See, e.g.*, '427 patent, 17:60-67. *Yang* teaches that images 108a-108d can be icons, and that collectively, images 108a-108d (and clock 106), form "an original interface such as home screen." *Yang*, ¶20. Thus, POSITA would recognize that *Yang's* original interface is a graphical content data structure since it is made up of bitmaps. Wolfe, ¶167; *Yang*, ¶30.

Yang discloses that its device can switch from OSM to ASM, which results in all or part of the original interface being extracted to fit into reduced-size displaying area:

> Generally, **all or part (i.e., an "extract) of the original user interface** shown in original size displaying area 104a **may be cut (i.e., extracted) and displayed in reduced size displaying area** 104b, 104c, 104d, or 104e.

Yang, ¶21. *Yang* also teaches that a single icon can be "**selected** and extracted from the original interface" for display in ASM (*Id.*, ¶44), an example of which is shown in Fig. 1D, and further teaches that the ASM figures shown in Figs. 1B-1E are non-limiting examples, and that "a displaying area may be adjusted in numerous different ways to meet a particular user's needs." *Id.*, ¶21. And as seen in the block quote above, *Yang* specifically teaches that an extract of the original interface can be "displayed in reduced size displaying area 104b, 104c, 104d, or 104e." *Id*. Thus, *Yang* teaches that a single icon, *e.g.*, image 108a, can be selected and displayed in reduced-size displaying area 104c. This is illustrated in the annotated and modified figures below showing *Yang's* device in OSM (left-side) and ASM (right-side):



Wolfe, ¶¶168-169. In both figures, the area of the display corresponding to the recited "second portion" and "available display area" are blue-hatched and purple-highlighted, respectively. On the right-side, Fig. 1D has been modified to show display of image 108a inside of reduced-size displaying area 104c (instead of 104d), as *Yang* teaches is possible. *Id.*, ¶170.

The "selecting elements" limitation is thus met as follows: When in OSM, *Yang's* original interface is displayed (*i.e.*, images 108a-108d (and clock 106)). Since *Yang's* original interface corresponds to the recited "graphical content data structure," when in OSM, all elements of the graphical content data structure for

Yang's original interface have been selected for display in original displaying area 104a, thus corresponding to the "selecting elements" limitation. *Id.*, ¶171.

When in ASM, an extract of the original interface is displayed in the reduced-size displaying area 104c (*i.e.*, the recited "available display area"). *Yang's* extracting an icon from *Yang's* original interface thus also corresponds to the "selecting elements" limitation since *Yang's* original interface corresponds to the recited "graphical content data structure," and extracting an image, *e.g.*, icon 108a, is "selecting elements.". *Id.*, ¶172.

When in ASM, inactive area 112 is powered-off. *Yang*, ¶23. Thus, when *Yang* extracts icons from its original interface for display in ASM, a POSITA would understand that the selection is "based at least in part on whether the second portion is in a powered-on state" since the selection is based on switching to the reduced-size displaying area (the recited "available display area"), where inactive area 112 ("second portion) is in a powered-off state. *Yang*, ¶53. Similarly, when *Yang* switches to OSM, the selection of elements (*e.g.*, icons) is also based in part on the fact that formerly inactive area 112 is in a powered-on state since the selection is based in part on the device's knowledge that inactive area 112 is powered-on and can have icons displayed (*i.e.*, in a powered-on state). Wolfe, ¶173. Note that the claim only requires selection of elements based "in part" on whether the second portion is in a powered-on state. Thus, *Yang's* selection of elements based on other

criteria (*e.g.*, dimensions) in addition to the powered-on state of inactive area 112, is immaterial. *Id*.

Thus, *Yang* discloses this element in two ways, and the claim is obvious. *Id*., ¶¶174-175.

3. Claim 3

[3a] "The method of claim 1, further comprising: receiving a graphical content data structure comprising content for display in the available display area; and"

See Section V.D.2.[2a]; *Id.*, ¶176.

[3b] "scaling elements of the graphical content data structure for display in the available display area based at least in part on a dimension of the available display area."

Yang discloses this element. *Id.*, ¶¶177-182. As discussed, the area of the recited "available display area" varies depending on whether it includes only the recited "first portion" or both the recited "first portion" and "second portion." As also discussed, *Yang* teaches scaling of images 108a-108d and 106 when transitioning from what is displayed in Fig. 1C to what is displayed in Fig. 1A. *See* Section V.D.1.[1f].

Yang explicitly teaches that scaling of images 108a-108d and 106 is based on the dimension of the available display area:

> While in ASM, the frame size displaying area may be further adjusted to manipulate the extract of the original

> interface. **For example, with respect to FIG. 1C, the frame size displaying area (which is the same as original size displaying area 104a) may be reduced to a reduced size displaying area 104c such that the extract of the original user interface is decreased to the same proportion**.

Yang, ¶22; *see also* Wolfe, ¶178. *Yang* further states:

> **Initially, the display adjustment module may cause the extracted interface selection to be framed by a displaying area** (i.e., "frame size displaying area"), as indicated in block 215. As one example, in response to a select or extract instruction, **the display adjustment module may cause displaying area 104a to automatically resize (if need be) to a frame size display area to frame the selected extract of an interface**.

Yang, ¶37; *see also* Wolfe, ¶179. *Yang's* disclosure that the displaying area 104a can resize "to a frame size display area" demonstrates that it scales its graphical content data structure (e.g., original interface) based at least in part on a dimension of the available display area. As is well understood, a "dimension," is a measure in one direction (Ex. 1009, p. 351), which in the context of the claim, is the height or width of the display area. Wolfe, ¶180. The scaling of images 108a-108d and 106 to get from what is displayed in Fig. 1C to what is displayed in Fig. 1A in *Yang* will

plainly be based, at least in part, on the height or width of the available display area. *Id*.

Yang contains additional teachings showing that elements of its graphical content data structure are scaled "based at least in part on a dimension of the available display area." For example, *Yang* discloses that icon 108a can be displayed in multiple different ways. Icon 108a is plainly an element of a graphical content data structure since it is a bitmap. *Id.*, ¶181. Moreover, icon 108a is displayed as in Fig. 1A when the entire screen 102 is the available display area. Likewise, icon 108a is displayed as in Fig. 1D when reduced-size displaying area 104d is the available display area. Finally, icon 108a is displayed as in Fig. 1E when reduced-size displaying area 104e is the available display area. *See Yang*, ¶¶21, 23; *see also*, Wolfe, ¶181. Each of reduced-size displaying areas 104d and 104e, as well as original displaying area 104a have "dimensions," and icon 108a, *i.e.*, an element of a graphical content data structure, is plainly scaled based on the dimensions of each. *Id.*

Thus, *Yang* discloses this element, and *Yang* in view of *Law* renders the claim obvious.

4. Claim 4

[4a] "The method of claim 1, further comprising: receiving a graphical content data structure comprising content for display in the available display area; and"

See Section V.D.2.[2a]; *Id.*, ¶183.

[4b] "scaling elements of the graphical content data structure for display in the available display area based at least in part on whether the second portion is in a powered-on state."

Yang discloses this element. *Id.*, ¶¶184-187. Claim element [4b] is similar to element [3b], the difference being that element [4b] requires that the scaling be based in part on whether the recited "second portion" is in the powered-on state. As discussed, *Yang* teaches scaling of images 108a-108d and 106 when transitioning from what is displayed in Fig. 1C to what is displayed in Fig. 1A. *See* Section V.D.1.[1f]. *Yang* explicitly teaches that scaling of images 108a-108d and 106 is based on whether inactive area 112 of Fig. 1C (which as discussed corresponds to the recited "second portion") has transitioned to a powered-on state. *See Yang*, ¶20 (explaining that in OSM, *i.e.*, when the second portion is powered-on, information is displayed as depicted in Fig. 1A, at a larger scale); *Yang*, ¶22 (explaining that in ASM, *i.e.*, when the second portion is powered-off, information is displayed as depicted in Fig. 1C, at a smaller scale). Since the "automatic full-size display" can result from a setting (either a default or a user configuration), whether images 108a-108d and 106 will be scaled to be displayed in what had been inactive area 112 when

transitioning from the display in Fig. 1C to the display in Fig. 1A, is based, at least in part, on whether inactive area 112 transitioned to a powered-on state. If the "second portion" is not powered-on, images 108a-108d and 106 are displayed as in Fig. 1C. If, however, the "second portion" is powered-on, images 108a-108d and 106 are scaled to be displayed as in Fig. 1A. Wolfe, ¶184.

Yang contains other teachings demonstrating that scaling of images 108a-108d and clock 106 is "based at least in part on whether the second portion is in a powered-on state." For example, *Yang* states:

> An embodiment of a portable electronic device may conserve power while in a normal operating mode by switching from an original screen mode to an adjusted screen mode. **While in adjusted screen mode, the device display may include an <u>adjustable displaying area</u> and an <u>inactive area</u>**. An extract from a user interface may be displayed in the adjustable displaying area and the **<u>adjustable displaying area may be adjusted to occupy less than the entire display screen</u>**. **<u>Thus, at least a portion of the adjusted displaying area perimeter may be adjacent to the inactive area</u>**, which may extend to the periphery of the display screen. Thus, the inactive area may fill the portion of the display screen that is not being used to display the extract of the user interface in the adjustable displaying area.

Yang, ¶18. Wolfe, ¶185.

Thus, *Yang* discloses this element, and *Yang* in view of *Law* renders the claim obvious.

5. Claim 5

[5a] "The method of claim 1, further comprising: receiving a graphical content data structure comprising content for display in the available display area; and"

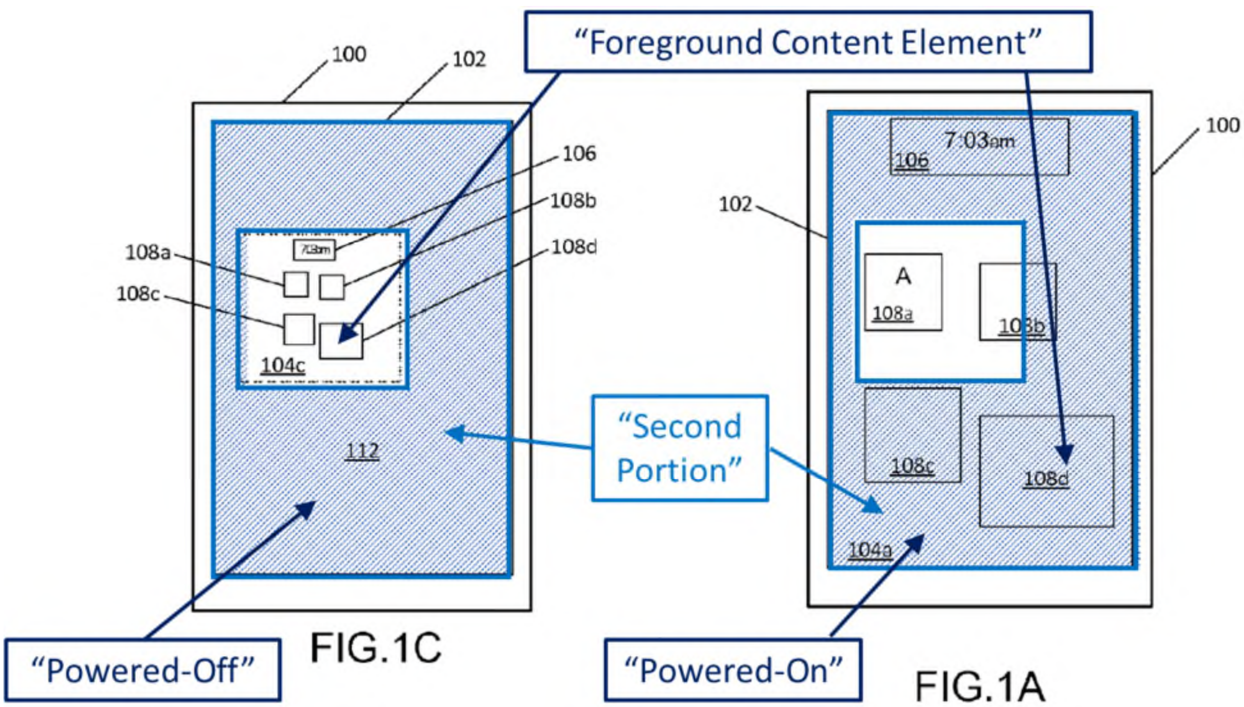
See Section V.D.2.[2a]; Wolfe, ¶188.

[5b] "adjusting a position relative to a background element of a foreground content element of the graphical content data structure for display in the available display area based at least in part on whether the second portion is in a powered-on state."

Yang discloses this element. Wolfe, ¶¶189-194. The plain English of this element requires adjusting the position of "a foreground content element of the graphical content data structure." This positional adjustment must be relative to "a background element" and be based on whether the recited "second portion" is in the powered-on state. Wolfe, ¶189.

The background of *Yang's* original displaying area 104a (*see Yang* ¶20 ("*e.g.*, "…background such as wallpaper…")) corresponds to the recited "background element." Wolfe ¶190. A POSITA would have understood that information such as images 108a-108d or clock 106, which are of importance to a user or with which the user may interact, correspond to the recited "foreground content element[s]." *Id.*

Where foreground elements 108a-108d and clock 106 are positioned relative to the background element displayed on display screen 102 is plainly based on whether inactive area 112 (the recited "second portion") is powered-on since each has had their position adjusted relative to the background element. This positional adjustment is based on whether, as in Fig. 1C, inactive area 112 (i.e., the "second portion") has been powered-off, or, as in Fig. 1A, the second portion is powered-on. This can be seen in Figs. 1A and 1C as annotated below:



Wolfe, ¶190. Thus, *Yang* discloses this claim element.

In addition, *Yang* further teaches that the position of the adjusted display area 104c (which includes foreground elements 108a-108d and 106) may be adjusted relative to the remainder of the display screen:

> Although not shown, **an adjusted displaying area 104 b, 104 c, 104 d, or 104 e also may be moved to a different location of display 102 screen**.

Yang, ¶54; Wolfe, ¶191.

Moreover, *Yang* explicitly discloses that in ASM, a "display adjustment module" may cause a displaying area, i.e., foreground content elements, to be "adjusted … by repositioning":

> Referring now to block 220, **the display adjustment module may cause a frame size displaying area to be adjusted or further adjusted such as by repositioning**, reducing, enlarging and/or stretching.

Yang, ¶39; Wolfe, ¶192. *Yang* further discloses that all of the embodiments described therein "may optionally include, repositioning the frame size displaying area from the original position on the display screen to a different position on the display screen," as is required by this element of claim 5 of the '427 patent. *Yang*, ¶94; Wolfe, ¶193.. Thus, *Yang* in view of *Law* renders claim 5 obvious.

6. Claim 6

[6a] "The method of claim 1, further comprising: receiving a graphical content data structure comprising content for display in the available display area; and"

See Section V.D.2.[2a]; Wolfe, ¶195.

[6b] "selecting elements of the graphical content data structure for display in the available display area based at least in part on a dimension of the available display area."

Yang discloses this element. Wolfe, ¶¶196-199. An example of an element of a graphical content data structure in the '427 patent is an icon. *See* '427 patent, 17:59-67; 8:39-42; Figs 7-8. As discussed in Section V.D.2.[2a], *Yang* discloses bitmaps representing icons, *e.g.*, images 108a-108d, which a POSITA would understand are the same as the elements of a graphical content data structure disclosed in the '427 patent. In addition, a POSITA would understand that *Yang's* bitmaps include pixel color values, and subpixel values which are also elements of this graphical content data structure. Wolfe, ¶196. And as discussed in Sections V.D.1.[1d], *Yang* teaches at least two ways for inactive area 112, shown in Fig. 1C to transition to a "powered-on state."

When *Yang's* device is in the state shown in Fig. 1C, in which inactive area 112 (corresponding to the recited "second portion") is powered-off, *Yang's* device selects bitmaps corresponding to icons 108a-108d for display in available display area 104c. *See, e.g.*, *Yang* Fig. 1C. This selection is based in part on the dimensions of reduced-size displaying area 104c since that is the only place where information can be displayed. *Yang* explicitly teaches this as it states that "[g]enerally, all or part (*i.e.*, an 'extract') of the original user interface shown in original size displaying area

104a may be cut (*i.e.*, extracted) and displayed in reduced size displaying area 104b, 104c, 104d, or 104e." *See id.*, ¶21; Wolfe, ¶197.

Furthermore, as discussed, when inactive area 112 (corresponding to the recited "second portion") is in a powered-off state, reduced-size images corresponding to icons 108a-108d are displayed in available display area 104c. Wolfe, ¶198. *Yang* teaches that "the extract of the complete visible interface, should be reduced in size such as to reduced size displaying area 104c." *Yang* ¶41. *Yang* further explains that "[r]educing techniques may reduce the extract of the interface so that it keeps the same proportions while simulated in small scale." *Yang*, ¶42. A POSITA would understand that the size reduction of the icons taught in *Yang* can be accomplished by selecting a subset of the pixel color values (*i.e.*, elements of the graphical content data structure) for display. For example, selecting every other pixel color value in each row of a bitmap would display an icon image that is half as wide. This common technique would be well known at the time of the *Yang* application and would correspond to *Yang's* teaching regarding the size reduction of bitmaps. Wolfe, ¶198.

Thus, *Yang* discloses this element, and *Yang* in view of *Law* renders the claim obvious.

7. Claim 7

Claim 7 is an apparatus claims reciting certain structural elements performing functions recited as method steps in claim 1. It is obvious for the reasons discussed below.

[7p] "A multifunction device, comprising:"

Yang in view of *Law* discloses a multifunction device, *e.g.*, a smartphone. *See, e.g.*, *Yang*, ¶19; *Law* ¶¶4, 24. Thus, to the extent the preamble is limiting, it is disclosed by *Yang* in view of *Law*. Wolfe, ¶201.

[7a] "one or more processors;"

Yang discloses that its device comprises one or more processors. See, for example, GPUs, processors, etc., discussed in *Yang*, ¶¶30, 64-77 and shown in Figs. 5-7 (*e.g.*, reference numbers 500, 1038, 1070, 1080). The same is true of *Law*. *See, e.g.*, *Law*, ¶¶27-32 (reference numbers 132, 150, illustrated in Figs. 1-3). Thus, this element is disclosed by *Yang* in view of *Law*. *See* Wolfe, ¶202.

[7b] "a display screen and associated sensors; and"

Yang's portable electronic device, shown in Figs. 1A-1E, has a display screen 102 and associated touch sensors. *Yang*, ¶19. *Law* also discloses a display and associated sensors. *See* Section V.B. Thus, this element is disclosed by *Yang* in view of *Law*. *See* Wolfe, ¶203.

[7c] "one or more memories storing program instructions executable on the one or more processors to perform:"

Yang discloses that its device has memory that stores program instructions that are executed on its disclosed processors. *See, e.g., Yang*, ¶65 (memory 570, containing instructions 513, shown in Fig. 5); *see also* ¶¶72, 85. The same is true of *Law*. *See, e.g., Law*, ¶¶28-29 (elements 140, illustrated in Figs. 1-3). Thus, this element is disclosed by *Yang* in view of *Law*. *See* Wolfe, ¶204.

[7d] "displaying first information in an available display area comprising a first portion of the display screen in a configuration having a plurality of portions, comprising"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1a]. Wolfe, ¶205.

[7e] "the first portion of the display screen and associated sensors, which is configured in a powered-on state to perform display functions and receive user input, and"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1b]. Wolfe, ¶206.

[7f] "a second portion of the display screen and associated sensors, which is configured in a powered-off state and incapable of receiving user input;"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1c]. Wolfe, ¶207.

[7g] "responsive to a user indication in the in the first portion, adding the second portion to the available display area by transitioning the second portion to the powered-on state to perform display functions and receive user input;"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1d]. Wolfe, ¶208.

[7h] "displaying second information in the second portion;"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1e]. Wolfe, ¶209.

[7i] "program instructions executable on the one or more processors to perform generating the second information by mathematically upscaling the first information,"

Yang in view of *Law* discloses the recited functionality. *See* Section V.D.1.[1f]. Wolfe, ¶ 210. *Yang* also discloses that these functions are performed by executing program instructions that are executable on processors, as discussed regarding 7[c]. The same is true of *Law*. *See Law*, ¶12, 28-29, 55-57.

[7j] "wherein the second information comprises a portion of the first information upscaled for display in both the second portion and the first portion; and"

Yang in view of *Law* discloses this. *See* Section V.D.1.[1g].

[7k] "program instructions executable on the one or more processors to perform displaying third information in the first portion, wherein the third information comprises a portion of the first information upscaled for display in both the second portion and the first portion"

Yang in view of *Law* discloses the recited functionality. *See* SectionV.D.1.[1h]. Wolfe, ¶213. *Yang* also discloses that these functions are performed by executing program instructions that are executable on processors, as discussed regarding 7[c]. The same is true of *Law*. See *Law*, ¶12, 28-29, 55-57.

8. Claims 8-12

Claims 8-12 are identical to claims 2-6 except that claims 8-12 recite the steps recited in claims 2-6 performed via program instructions executable on one or more processors. *Yang* discloses this additional feature. *See, e.g.*, Section V.D.7.[7c]. Thus, claims 8-12 would have been obvious for the reasons discussed regarding their earlier corresponding claims and elements. *See* Wolfe, ¶215, and:

Claim	Unpatentable as discussed regarding:
8	Claim 2 (Sections V.D.2.[2a]-V.D.2.[2b])
9	Claim 3 (Sections V.D.3.[3a]-V.D.3.[3b])
10	Claim 4 (Sections V.D.4.[4a]-V.D.4.[4b])
11	Claim 5 (Sections V.D.5.[5a]-V.D.5.[5b])
12	Claim 6 (Sections V.D.6.[6a]-V.D.6.[6b])

9. Claims 13-17

Claims 13-17 are identical to claims 1-5 except that claims 13-17 are *Beauregard* claims. *Yang* discloses program instructions stored on non-transitory, computer-readable storage medium as well. *See, e.g.*, *Yang*, ¶¶77, 85. Thus, claims 13-17 would have been obvious for the reasons discussed regarding their corresponding claims and elements. *See* Wolfe, ¶216, and:

Claim	Unpatentable as discussed regarding:
13	Claim 1 (Sections V.D.1.[1p]-V.D.1.[1h])
14	Claim 2 (Sections V.D.2.[2a]-V.D.2.[2b])
15	Claim 3 (Sections V.D.3.[3a]-V.D.3.[3b])
16	Claim 4 (Sections V.D.4.[4a]-V.D.4.[4b])
17	Claim 5 (Sections V.D.5.[5a]-V.D.5.[5b])

E. Grounds 1B: The Combination of *Yang*, *Law*, and *Ignatchenko* Discloses All Elements Of The Challenged Claims

As discussed regarding Grounds 1A, *Yang* in view of *Law* discloses all elements of claims 1-17 and renders these claims obvious. These claims are also rendered obvious by *Yang* in view of *Law* and *Ignatchenko*. To the extent Dareltech argues that the *Yang-Law* device fails to disclose "generating the second information by mathematically upscaling the first information" limitation recited in elements [1f], [7i] and 13[f], it would have been obvious to combine the *Yang-Law* device with *Ignatchenko* to provide such a system. Wolfe, ¶¶217-221.

Like *Yang-Law*, *Ignatchenko* discloses a computing device that displays digital images, *e.g.*, bitmaps, on a display screen. *Ignatchenko*, 1:12-20. *Ignatchenko* discloses a method for scaling such digital images (*Id.*, 1:7-8), and specifically describes how to "[s]cal[e] a first digital image having a plurality of

visual images from a first size to a second size…" *Id.*, 2:6-8. *Ignatchenko* makes clear that its scaling can increase the size of images (*Id.*, 1:44-48), and that such re-sizing can involve modifying the resolution of those images. *Id*., 2:58-60 ("The present disclosure provides systems and methods for the modification of the size and/or resolution of an image having a plurality of visual elements."); *see also id.*, 1:21-43, 2:58-60; Wolfe, ¶218. Finally, *Ignatchenko* uses mathematical techniques to increase size and resolution. *See, e.g*., *Ignatchenko,* 3:61-4:5 (discussing known mathematical scaling techniques); and 4:21-44 (specific algorithm for increasing size and resolution). *See also* Figs. 4-5, showing resizing of a first digital image to a second digital image. Note that a POSITA would recognize that *Ignatchenko's* scaling algorithm plainly increases resolution since it "maintains the clarity and sharpness of at least some of the elements of the image while maintaining a manageable file size of the graphics, and will allow the user to either enlarge or reduce the image size." *Id*., 1:44-48; Wolfe, ¶218.

A POSITA would have been motivated to combine *Ignatchenko's* scaling method with *Yang-Law* device because it is a simple and convenient method for increasing the size of images, *e.g*., images 108a-108d, in *Yang's* reduced-size displaying area 104c. Wolfe, ¶219. Likewise, a POSITA would have understood that the clarity and sharpness of these images could be maintained as they were enlarged, and would have recognized that *Ignatchenko's* scaling method could be

used for this purpose. *Id*. Just like *Yang*, *Ignatchenko* teaches resizing "in response to user input based on the user's preference for the size of the image (e.g., the amount of space that the image occupies on a monitor)," (*Ignatchenko*, 4:13-18) and calls out as an example an action analogous to a spreading gesture (clicking and dragging). *Id.*, 4:18-20. Thus, a POSITA would have recognized that *Ignatchenko's* scaling methods would have been one way of many known at that time to mathematically upscale the images in *Yang's* reduced-size displaying area 104c so that the enlarged images maintained their clarity and sharpness. Wolfe, ¶219.

A POSITA would have had a reasonable expectation of success in using *Ignatchenko's* scaling methods with *Yang's* device since *Yang's* device already includes memory, processors and a display and other hardware needed to execute program instructions implementing *Ignatchenko's* mathematical techniques. *Id*., ¶220. Indeed, *Ignatchenko* notes that its methods can be used with personal digital assistants (*Ignatchenko*, 7:45-53), which a POSITA would have known are multifunction devices like those disclosed and claimed in the patent. *Id.*

The remaining claim elements of claims 1-17 are disclosed by *Yang* in view of *Law* as discussed above for Ground 1A. Accordingly, *Yang* in view *Law* and *Ignatchenko* renders this element obvious. Wolfe, ¶¶217-221.

VI. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Party-in-Interest

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. are the real parties in interest for this petition.

B. Related Matters

Samsung is concurrently requesting inter partes review of U.S. Patent No. 8,717,328 in IPR2019-01528, and anticipates filing a petition challenging U.S. Patent No. 9,075,612. U.S. Patent No. 8,717,328 is a continuation of the ’427 patent. U.S. Patent No. 9,075,612 is a continuation in part of U.S. Patent No. 8,717,328 and is thus in the same family as the ’427 patent.

To the best knowledge of Samsung, the ’427 patent is or has been involved in the following district court litigations:

Name	No.	Court	Filed
Dareltech LLC v. Samsung Elecs. Co., Ltd. and Samsung Electronics America, Inc.	4:18-cv-00702	E.D.Tex	Oct. 4, 2018

To the best knowledge of Samsung, the ’427 patent has not been challenged in any *inter partes* review prior to this proceeding.

U.S. Patent No. 8,717,328 issued on May 6, 2014. U.S. Patent No. 9,075,612 issued on July 7, 2015. U.S. Patent No. 9,360,923 issued on June 7, 2016. U.S. Patent Application Serial No. 16/002,854, filed on June 7, 2018, seeks a broadening

reissue of U.S. Patent No. 9,360,923. Each of these patents and applications claim priority to the ’427 patent.

C. Lead and Backup Counsel

Lead Counsel	Back-Up Counsel
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D. Service Information

Please address all correspondence to lead and back-up counsel at the addresses shown above. Samsung consents to electronic service by e-mail.

Date: August 21, 2019

Respectfully submitted,

/Jeffrey A. Miller/
Jeffrey A. Miller, Lead Counsel
Reg. No. 35,287

CERTIFICATE OF COMPLIANCE

The undersigned hereby certifies that the foregoing Petition for Inter Partes Review contains 13,922 words, excluding those portions identified in 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

/Jeffrey A. Miller/
Jeffrey A. Miller

CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing Petition for *Inter Partes* Review, the associated Power of Attorney, and Exhibits 1001-1023 are being served on August 21, 2019, by Federal Express at the following address of record for the subject patent:

MICHAEL BEST & FRIEDRICH LLP (AUS)
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Courtesy copies of the same documents were served on August 21, 2019, by Federal Express at the following address of record for litigation counsel:

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